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VOLUME VI APRIL, 1922 No. 4

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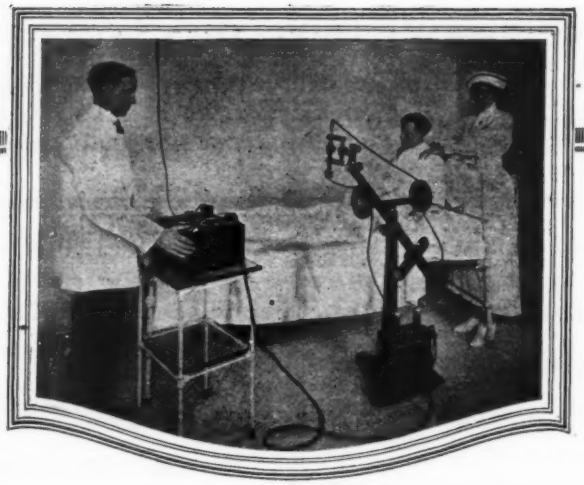

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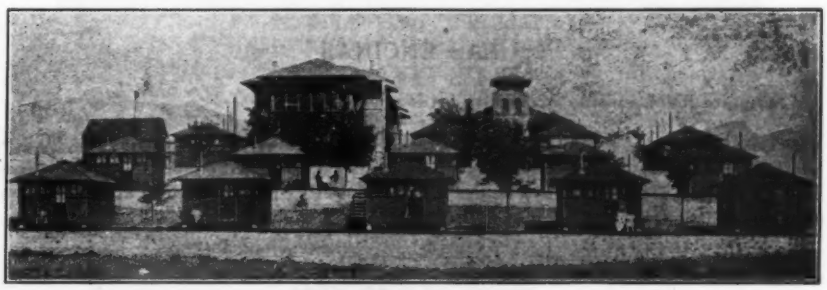

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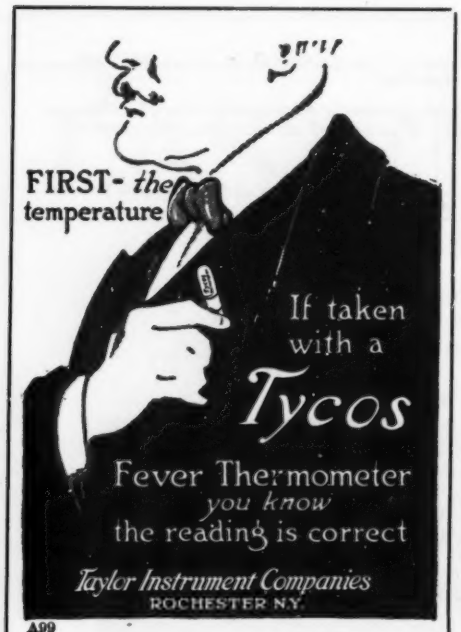

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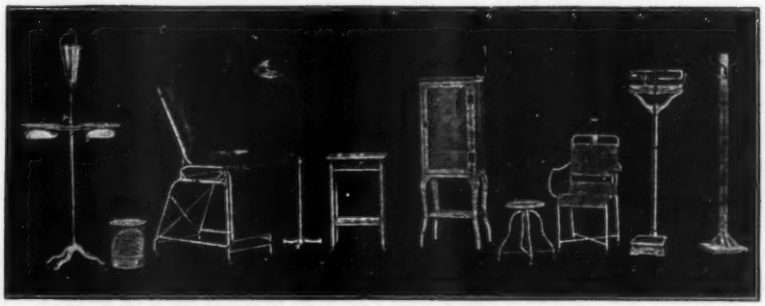

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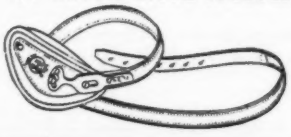

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VOL. VI. APRIL, 1922. NO. 4

Entered at the Post Office at Phoenix, Arizona, as Second Class Matter.
"Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized March 1, 1921."

THE MANAGEMENT OF SOME CHRONIC DIGESTIVE TROUBLES*

DR. D. E. SMALLHORST, El Paso, Texas.

The embryonic alimentary tract, at about the 28th day, is nothing more than a straight tube, bulging slightly posteriorly at a point about one-third of its length from head end of the embryo, the bulge representing the stomach; this canal is attached to the posterior body wall for its whole length. The vagi nerves lie upon each side of the esophagus and stomach. About the third month the stomach begins its rotation upon its two axes, so that what was the left side now becomes the anterior surface, and the right side the posterior surface. The top or cardiac end drops down and to the left, while the lower or pyloric end is drawn up and to the right, so that about the end of the third month, the fetal stomach has assumed its normal shape and position. The intestinal canal begins to show flexures about the sixth week, when the duodenum is well marked as that portion of the gut tube that passes from the lower end of the stomach towards the dorsal body wall; from this time on, the growth and development of the small intestine consists chiefly in an increase in length, with consequent modifications of its mesentery. The striking feature is the rapid growth in length of this gut, and the fact that it extends from the abdominal cavity into the umbilical cord. This extrusion keeps up until about the end of the tenth week, after which it is gradually withdrawn into the abdomen. At the end of the fourth month it lies entirely within the abdominal cavity. A failure of the complete restoration of this gut to the abdominal cavity results in a congenital umbilical hernia.

The vitelline duct connects the early gut tube with the umbilical vesicle. At about the sixth week the umbilical vesicle begins to retrograde; this leaves the vitelline duct connected to the ventral surface of the gut tube; this duct suffers complete obliteration, in most cases, in the later stages of fetal life. In some instances, however, its proximal or gut end does not retrograde, but presents a blind pouch of varying length, which is known, after birth, as Meckel's diverticulum. Should this tube remain attached to the umbilicus after birth it results in a congenital fecal fistula.

In the third month the vermiform appendix is only a curved slender tube projecting from the cecum. At its first appearance it is the same size as the cecum, but, in the rapid growth of the gut, the appendix lags behind, and later appears in adult life as a very small tube of varying length attached to the end of the cecum.

About the sixth week the lower bowel undergoes quite a change by lengthening, and the consequent change in position; there is presented the cecum,

*Read before the Thirty-Ninth Annual Meeting of the New Mexico Medical Society at Albuquerque, April 29th and 30th, 1921.

transverse colon, descending colon and rectum, with ascending colon absent until about the end of the third month, when the cecum gradually extends down, and, by the end of the eighth month, the entire intestinal canal is complete and in its normal adult position.

The anatomy of the alimentary canal, briefly, is as follows: The esophagus is only a passageway for food and other substances from the mouth into the stomach. It retains almost indentically its embryonic position. The stomach is the pouch-like enlargement of this canal, and is held in position by attachments formed from omentum and from its rotation into position together with the migration of the liver to its position in the right upper quadrant, carrying with it the peritoneum as a complete envelop. This peritoneum unites at the transverse fissure of the liver and extends down as the lesser omentum and is attached to the duodenum and lesser curvature of the stomach. The esophageal end is fixed more firmly by a fold of peritoneum, the result of the rotations of the stomach, and the migration of the kidneys to their adult positions. This attachment is the gastrophrenic ligament.

The intestines are held in position, or rather attached to the posterior body wall, by the mesentery which is an extrusion of the peritoneum, coming from the body wall and completely covering the intestines with the exception of a small triangular space upon the superior surface, where the two peritoneal coverings come together. Similar triangular spaces are formed, in same manner, on the greater and lesser curvatures of stomach. These spaces carry the blood vessels and nerves that supply the stomach and intestines.

This brings us to the purpose for which this canal is used in the life cycle. To maintain animal life, the constant building up and replacing of used or waste tissue is accomplished by a process through which all substances pass when introduced into this canal. These ingested substances or foods must have certain physical and chemical properties in order to meet the body requirements. These properties are given the foods by the process of digestion.

The general physiology of the change is carried on by the whole system complex which makes up a most important part of the human body known as the Digestive System. The function of this system is to bring the food into such a condition that it can be absorbed through the intestinal epithelium into the blood and lymph. The carbohydrates are broken down into monosaccharrids; neutral fats are split into fatty acids and glycerin; proteins are broken down into amino acids. The agencies which effect these decompositions are the digestive enzymes and ferments contained in the various digestive fluids and juices. The digestive juices are produced by glands, which are most numerous in the upper levels of the digestive tract. The lower levels have, as their function, that of absorption of the digested foods. In order that the food may be kept in a state of proper consistency, and may move readily along the digestive canal, numerous mucous glands are scattered throughout the whole extent of the canal. Some of the main salivary glands, as well as the pancreas and liver, discharge their secretions into the digestive canal by special ducts; others, like the isolated salivary follicles of the mouth, the gastric glands, and the crypts of Lieberkuhn in the intestine, do not have anatomically distinct ducts, but discharge their secretions directly into the digestive tube.

Another form of digestion that takes place in the small intestine is "Bacterial Digestion." This has been found to be as important to life and metabolism as the enzymic processes. Chicks hatched under perfectly sterile conditions and fed sterile food die in a very few days after birth, but when fed the same food mixed with a portion of their excrement, they live and thrive. Living bacteria are more numerous high in small intestine, and decrease on down through the canal, so that the estimation is probably not an exaggeration, when it is stated that very nearly one-fourth by weight of the dried human feces, is made up of the bodies of dead bacteria.

The nitrogen content of feces amounts to about 1.5 grams per day, about one-half of which is bacterial nitrogen. The diet of course not only controls the amount of feces, but also the number of bacteria. A diet rich in cellulose, such as green vegetables, fruit, etc., not only increases the mass of feces but also the number of bacteria.

For the digestive process to proceed normally, there must be no anatomical or pathological derangement of the canal or its contents. Should there be a disturbance of digestion there must necessarily be some anatomical malformation or pathological condition directly or indirectly connected with this canal to cause the disturbance. It is intended to show some of the causes of these derangements, and to mention the resulting digestive disturbances, with what has been of service to me in the management of such cases.

Most of the cases to be described can be grouped into one of two classes, either Gastroptosis or Enteroptosis because of the displacement or dropping down of some portion of the digestive tract. In the cases where the stomach is ptosed to the third degree there is decided pull upon all the tissues and organs to which the stomach is attached. This constant drag or pull of the loaded stomach, in many cases, causes a kink in the early portion of the small intestine resulting in irritation with perhaps adhesions that, in themselves, may be the cause of severe pain and other distressing symptoms, such as ulcer, dilatation, hypo or hyper acidities, partial stasis, or atony of the stomach. The ptosed stomach always carries the colon down with it; this may cause kinks or folds in the colon and the pressure of the loaded stomach upon the colon may not only cut off the free progress of the food through the colon, but frequently the colon is irritated by this pressure to such an extent that any degree of colitis may result, with all the distressing symptoms of that disease.

The etiology of gastroptosis is very difficult to determine; many contributing causes may enter and all must be given consideration. This trouble occurs more often in women than in men; it is caused by improper or ill-fitting clothing, movable or dislocated kidney, liver, or intestine; diverticulitis; repeated pregnancies; traumatism; meteorism; tumors in the abdomen; disease or malignanices at or near the pylorus; abdominal adhesions; volvulus; intussusception; Lane's kink; anemia; weakened tonus of attachments; overloading of stomach; recurring attacks of appendicitis, etc.

As to the etiology of ptosis of the intestines, what is said of the stomach can be said of the intestines, adding also, intestinal parasites; ingested foreign bodies, such as hair, nails, pins, glass, seeds, etc.; also gastroptosis; adhesions; loss of tone of abdominal wall.

The symptoms are as varied as the individual sufferer. The patient usually complains of pain of a varying degree of intensity, immediately after or perhaps some hours after eating, at the epigastrium or at the normal duodenal position; they also complain of much gas, and a fullness in the gastric region with eructations of a tasteless gas, fluid or even ingested food; the taste may be sour to bitter, according to the time elapsed after eating; there is often a feeling of weight or a lump in the stomach; headache, backache, burning spots over the surface of the body especially the back; certain foods bring on a digestive discomfort, usually greasy food, pork, raw fruit or salads, highly seasoned food, rich pastries, etc. Most of these patients suffer from constipation; at times, however, this may alternate with diarrhea.

If there is a displacement of both stomach and colon there is a most obstinate constipation with a general abdominal tenderness and bloating, with headache, dizziness, spots before the eyes, coated tongue and a tendency to hemorrhoids.

The laboratory is a great aid through the knowledge furnished of the gastric secretion and motility. The x-ray checks up the motility and gives us position, abnormality in outline, and the presence of many pathological conditions in or near the stomach and intestines; it also shows the movement of the contents in the different segments of the canal. By bringing together all these aids one is

able to arrive at a fairly accurate diagnosis.

TREATMENT

Some conditions, such as tumors, recurring appendicitis, foreign bodies, etc., must be corrected at once, and surgery, up to the present time, is the best remedy. However, other conditions are many times completely relieved by one or more of the following means of treatment: Restore the displaced organs as near to their normal position as possible. This is done by an abdominal support. The adhesive belt is applied and worn for four or six weeks; if this gives relief then some commercial support or corset, whichever is best suited to the individual case is fitted. Rubber supports are as a rule very unsatisfactory, short lived, and give pressure at the wrong place. This pressure should be of a lifting character, from below up. To accomplish this, at times a crescent-shaped pad is placed under the support and proves very satisfactory, especially if the patient is thin or emaciated. It is advisable never to have pressure applied to the abdomen above the umbilicus. In massage of the abdomen, there are four movements that have proved very useful, especially if constipation is an accompanying symptom. They are, briefly, as follows: Before arising in the morning drink at least two glasses of water; then lying prone, with knees flexed about 45°, with the heel of the hand rub down toward the pelvis, bringing hands up from pelvis to ribs with fingers pressing firmly into abdomen, as though kneading bread. The second motion is pushing alternately each side towards center of abdomen. The third is a punching motion, in which the tips of the fingers are pressed firmly and deeply into all parts of the abdomen. The fourth is made by placing the fingers of one hand upon the other and beginning at the right lower quadrant, with a deep corkscrew motion and following the colon, the contents of this gut are pushed into the sigmoid.

Immediately after this massage the patient goes through a bending exercise. We advise the modified army "setting up" exercise. Any method will do that will bring all the abdominal and back muscles into use. Both of these sets of exercises should never exceed twenty minutes, with the caution that overexercising at first defeats the purpose, but that constant attention to details will, in the end, produce the most gratifying results.

Diet is also very important and should receive the most careful study and attention. Outline a diet that will not give discomfort but will be both agreeable to the taste as well as pleasing to the eye. Distasteful or poorly served food very seldom satisfies or builds up tissue. These patients have all lost weight and, to regain this, too much care and attention cannot be given to what food is put into the stomach, and how it is served.

Medical treatment comes in for due consideration, but should never be used to the exclusion of everything else. In correcting the digestive juices artificially, about all is done that should be done. Very frequently these secretions return to normal very quickly if the above procedures have been religiously and intelligently carried out, and to give medicine when not needed is not only needless but hinders the complete recovery of the patient.

The displacements of the intestine are treated in the same manner as gastroptosis. If, however, there is a colitis or an intestinal stasis, there might be added to some of the above treatments a colonic flush. This is given by using from two to five gallons of water with one teaspoonful of soda to each quart of warm water, injecting slowly, with the douch can not over two feet above the buttock. This flushing should be given at least once and not oftener than three times each week, according to the severity of the case; on each alternate night about three to eight ounces of some vegetable oil is introduced into the colon and retained all night.

Sinusoidal electricity is another valuable aid in these conditions; not only in the psychological effect upon the patient, but in the stimulating and toning up that electricity has upon flabby muscles, it is, at times, very pleasing, and

good results are obtained much quicker with electricity than without it.

CONCLUSION: Take plenty of time in summing up conclusions before arriving at a diagnosis. Do not neglect the complete history, the routine physical examination, as well as the laboratory and x-ray, because each is valuable. Do not get discouraged if no immediate improvement is shown; months elapse, at times, before there is a decided change for the better. Never consent to surgery for these conditions until all possible medical and mechanical measures have been tried intelligently without improvement, for many times the surgical results are as bad, if not worse, than the original trouble.

DISCUSSION

DR. PRENTISS: I enjoyed this paper very much indeed. There are a few details I think of that may be of interest and importance. One of them is, of course, habit. Poor habits can frequently be connected up with poor health. In many cases the conditions in which the patients come are the result of factors operating for years, sometimes started as very slight errors, and generally, with more and more neglect, they become of increasing importance.

One habit is failure to go to the toilet when the patient should. This frequently begins in childhood. After a while this leads to toxemia, sometimes incorrectly called auto-intoxication, and that, in turn, can lead to chronic colitis, which, by producing contraction, will make the constipation worse, and following that, adhesions and ulcers of the stomach, infections, etc.

Another thing you frequently bring out as a habit is the failure of people to drink sufficient water. That is true not only with women,—I think it is fairly the rule with ladies,—but it is also astonishingly frequent with men, and when you get these clinical pictures and get a record of that, it is not indicated only to bring the amount of urine up to the normal amount, three pints, but try to bring the total quantity up to four pints. That helps in the elimination of toxin.

Also, get them to cut down the salt. Very frequently people will eat too much salt and pepper, particularly down south, and when you cut that down, frequently the hyperacidity of the stomach will diminish, and the nervousness, too.

Books on dietetics state that people who eat too much sodium chloride get nervous symptoms when otherwise they would not,—nervousness in women and in men, neurasthenia. Also, the excretion is diminished. I mean the excretion of the salts in the urine, particularly by the volatile oils contained in the condiments. When you use too many of these things the food is absorbed, goes through the liver first and then the kidneys and then excreted. When there is much auto-intoxication there is usually a subnormal toxin in the liver and that is an indication to cut down on the pepper and salt and such articles of food.

The x-ray examination gives valuable points with regard to motility. Now we can have the x-ray made and if there is a residue, it shows that the smaller intestine, and ordinarily where there is retention, it is very solid in the small intestine. It is usually in the colon, and then the material can be readily relieved by irrigation. Three pints of water very readily gets rid of everything in the colon.

DR. FRISBIE: The effect of posture as a cause of this condition I want to speak of, in which the duodenum is pushed upward, the back rounded and the shoulders stooped,—this is a very bad posture and certain to predispose to this condition and is a very large element in it.

If we can get at the girls and boys in the schools,—which I am trying to do with the university girls here, with the various gyms and the physical culture,—they should realize the influence on their physical health of these things, good, active, out-of-door work or recreation would build up the entire condition and do more towards eliminating this condition than anything else.

DR. HANNETT: I feel that this is likely a congenital condition more often than anything else and if we do try to remedy this in a preventive way, we must begin early. These potbellied children are in a condition of ptosis of the stomach and liver. During the past year I have had two cases to operate on, two children. Both cases had a long attachment of the bowel; the ileum was telescoped into the cecum, both above and below. Both had a long attachment of the bowel where it is fastened in the back, which predisposes to stasis intussusception. If we began early we could do some good. With a knee and chest position, by putting a large amount of fluid into the bowel, we could shorten the attachment and empty the colon. The colon and stomach seem to be the ones most affected with ptosis.

DR. LYNCH: In certain of the pictures, one in which the ascending colon was sort of adherent, I think would have to be explained on some other basis than that of congenital deficiency. I see a large number of pyelitis cases in which the infection takes place through the intestinal tract. In doing a certain amount of surgery I occasionally saw a case of pan nural celitis. Just what these were due to originally was pretty hard to determine, possibly in some cases constipation and in others dysentery. They did have pan nural celitis, and ptosis was really a result of an antecedent inflammation not due to posture or anything else mentioned.

I agree with Dr. Smallhorst, that the so-called case of ptosis should not be subjected to surgery. I think the general surgeons have gone through that period. However, there are

getting to be a certain number of these cases which are of the adherent type, which will eventually come to surgery, and those cases especially in which you have to do with the ascending colon and possibly the first half of the transverse colon.

DR. SMALLHORST: I wanted to bring out the fact that ptosis was the result of some other inflammatory process,—appendix, gall-bladder, etc. I do not think that posture has anything to do in it. Of all children I have x-rayed none have had ptosis of stomach or intestines. I may be wrong, and would like to be corrected, if so. Ptoses are usually the result of some inflammatory process that has been caused by overloading and a dragging down of some portion of the digestive tract, the attachment of which would, by pressure or the resultant kinking, prevent the free passage of the contents on through the gut. Severe cases of ptosis should be put to bed with the foot of the bed raised about six inches. If you can lift those organs three or more inches and hold them there by a support or belt, your patient is going to be comfortable and other symptoms will be relieved. The average belt sold by the drug store is absolutely useless; it must be intelligently and properly fitted. In the case of the cowboy shown, a leather belt about seven inches wide, dropped down and fitted well over the hips was put on him, and he has not had one bit of trouble since. In the case that had adhesions, she became pregnant, went to full term, has worn a good fitting support since, and has had no trouble.

My advice is to use the belt and keep the colon empty. I recommend the colonic flush. I have two patients at present who are using 5 to 20 gallons of water about every ten days. The amount of water to be used is judged by the coloring in the return flow; keep flushing until the water returns uncolored, if it takes one or twenty gallons.

ORGANOTHERAPY*

DR. M. B. CULPEPPER, Carlsbad, N. M.

Our profession has always searched for greater efficiency and, when a new remedy is suggested, we, at once, begin to try its virtues in whatever way our environments admit, for I know of no profession more willing or eager to find better methods. Many remedies come and go and leave us no legacy by which to remember them. I am glad to say that we have, in the last few years, been the recipient of a number of excellent new remedies and among this new list probably more have sprung from Organotherapy than from any other one source. More remedies of specific action and real merit,—and it is my opinion that many more remedies of merit will soon evolve from this same source and those of us who fail to grasp the situation and make a study along this line will suffer for our negligence. It does not take many fingers and toes on which to count the number of specifics in our old pharmacopea and we often wonder why so much was written and so much space taken in the description of so many useless and non specific remedies. How often have we read in our text-books of the therapeutic value of some remedy and prescribed it, hoping that we had struck the key-note and that our patient would be freed from his ailments, only to be again disappointed. Time after time we have been disgusted and almost felt as if our profession was a failure. But for the few real meritorious medicines, no doubt many, if not all, of us would have long ago left the field of action for a more reliable profession.

In organotherapy we have a few remedies which we are proud of and they are of comparatively recent introduction. Take Thyroid Extract, follow its action in a case of Cretenism or Myxedema. If given carefully and with proper general management, we are able to cure a very large per cent of these cases. I would like to ask you what you are to expect from any of our old line of drugs.

Adrenalin is specific in its action as a hemostat under circumstances where it is applicable, and I would ask you to point out its equal or anything that will begin to approach this wonderful substance along its line. It also has many other good qualities.

*Read before the Eddy County Medical Society at Artesia, N. M., April 25, 1921.

Pituitrin probably has won more general commendation as a uterine stimulant in parturition than any new remedy in recent years.

Corpora Lutea is fast becoming the standard remedy in vomiting in pregnancy; can be administered in capsules or hypodermically.

These wonderful organotherapeutic remedies, taken singly or in combinations have set the stage for real organotherapy, and when we more thoroughly understand Endocrinology and hormonic action, their relations with one another, and their effect upon metabolism, we can work out the formulas that will, in my judgment, approach true scientific medication.

In order to appreciate more fully the possibilities in these remedies, we will have to study the actions of the endocrine glands and I will endeavor to point out a few of those which are best understood.

The Thyroid Gland has, as its principal secretion, Thyroiodine which enters directly into the lymphatic system and blood current. It affects metabolism by decreasing body waste, by a more perfect oxidation of fats and of elimination; it also increases bone development and stabilizes the nerve centers. Without a sufficiency of this substance we have cretenism in the young and Myxedema in the old.

The Adrenal; as yet the character of its secretion is not understood chemically—but its physiologic action is more nearly made out, and is known to affect the blood pressure through its action on the inhibitory nerves of the sympathetic system. It also probably has more to do with our emotions—as laughter, excitement and depression, than any other one of the endocrines. Remember that it affects blood pressure.

The Pituitary body consists of an anterior and posterior lobe, which have entirely different functions. In man the anterior lobe is most highly developed and in woman the posterior lobe. Aside from affecting body growth, which may be hyper or hypo, according as the gland is developed, there is a distinct relation between this gland and the organs of generation.

It is now known that these glands do, through their secretions, produce what is called an hormonic action of all the other endocrine glands and when one of these is hyper or hypo active, the rest of them are affected accordingly and they, in turn, counteract the error of the affected endocrine in so far as possible. When the correction cannot be made, then our patient must suffer until we are able to help correct the endocrinic defect. Here is where our new remedies will be found; we must learn to detect which endocrine gland is at fault and also learn what other endocrine gland either inhibits or stimulates the affected gland. The endocrine glands taken from the healthy animal, dessicated and powdered, can be administered in capsules or tablets to supply the deficiencies in our patient.

These principles are put up in extracts and solutions and are combined in various proportions so as to meet the demands of our faulty endocrine and, by this procedure, we establish a normal hormone and our patient is relieved. Thyroid extract does this for Cretenism or Myxedema. Trypsogen does this for high blood pressure, when it is due to hyperadrenia; corpora lutea does this in vomiting of pregnancy; nephritin acts well in Brights disease; secretin acts well in intestinal indigestion, etc. The various combinations of these principles will, in my opinion, when we learn to diagnose our case and to find the combination, relieve us of a great many difficult problems that we have heretofore been absolutely helpless to solve and I think it will also relieve the surgeon of a good many patients.

DIAGNOSIS AND TREATMENT OF HAY FEVER*

ROY CARL YOUNG, M. D.
Assistant Medical Director, Hendricks-Laws Sanatorium, El Paso, Texas.

Hay fever is an anaphylactic phenomenon caused by the ingestion into the system of a proteose or albuminoid from plant pollen, animal emanation, food, or bacteria. This phenomenon is characterized by a swelling of the nasal mucous membrane with throwing out of a serous exudate, itching and burning of the nasal mucous membrane, pharyngeal mucous membrane and of the conjunctiva. The lacrymal gland is very much activated and there is an almost continual flow of lacrymal secretion. It is a constitutional condition which manifests itself by the reactions described above.

A patient coming to a physician for hay fever usually makes the diagnosis beforehand and comes in for treatment. Successful treatment will depend on the doctor making a correct differential diagnosis of the different causative agents, finding the causative pollen, animal emanation, bacteria, or food, and treating accordingly.

The technique for the skin test is as follows: The forearm is bared to the elbow, cleaned thoroughly with soap and water, and the skin sterilized with 95% alcohol. The alcohol is allowed to dry. Then with a small scalpel or scarifier a scratch from one-sixteenth to one-eighth inch long is made. This scratch should not go through the epidermis but just deep enough to open the epidermal lymphatics. If blood appears, this scratch should not be used as it will prevent the absorption of the extract. Usually six or seven such scratches are made according to the number of pollens to be used in the test. After the scratches are made drops of the test solutions are placed accordingly. A test, if positive, will show up in from five to thirty minutes. A positive reaction is characterized by an areola of redness varying from one-half to two inches in width with a small urticarial weal around the scratch which varies in size from 0.3 c. m. to 2.5 c. m. There is also an itching or burning sensation around the positive test. A control test should always be made, using a drop of the normal saline solution. Some advocate the use of the opthalmic or intradermal test but I have never used either. Schloss states of the intradermal rest "that when an alkali is used intradermally the results secured are of doubtful dependability." Walker, speaking against the intradermal, states: "It is much too delicate and even erratic."

In treating cases of hay fever, we are treating patients who are abnormally sensitive to a certain protein, whether it be from bacteria, foodstuff, animal emanation or pollen, and therefore, only one logical process is left to be followed; that is, the desensitizing of the patient. In the case of the pollens we have our specific pollen extracts which, when given in graduated doses at intervals of five days, will produce results. In the cases of perennial hay fever, that is, those due to animal emanations, we also have extracts of these proteins. I have seen one case of this kind which yielded to treatment. In the case of the bacterial type, a vaccine made from cultures of the nose and throat will usually give good results. In the cases due to foods, these must be kept out of the diet.

The treatment should be prophylactic as near as possible. Advocating a city ordinance which has for its purpose the destruction of all weeds. Avoiding all substances which the patients are susceptible to, such as food, plant or animal, etc. Specific treatment should always be preseasonal. By that I mean if a patient had hay fever last summer they should be tested out and desensitized by small doses of pollen extracts at least two months before the offending pollen appears. To quote Walker in the Boston number of the North

*Read before the Thirty-ninth Annual Meeting of the New Mexico Medical Society at Albuquerque, April 29th and 30th, 1921.

American Clinics: "Of 439 patients treated preseasonally with ragweed, 25% were entirely free from symptoms; 20% were practically free; 32% were 75% improved; 18% were 50% improved, and 4½% were not improved."

None of my twenty-five cases, except one, were given preseasonal treatment; in fact, they all came in with all symptoms present and usually very marked.

The treatment should never be attempted with extracts of three or four pollens in the same solution. In the first place, one cannot accurately gauge the correct dosage and desensitization to one group will not afford protection against aonther group. For instance, why give a patient who is susceptible to ragweed a mixture of ragweed, corn and goldenrod? Scheppegrell, Goodale, Walker, Oppenheimer and Gottlieb, Hall and Selfridge all condemn the method of using the combined extracts. Scheppegrell states that the principal reason for such a combination being used is to avoid the necessity of making a diagnostic test.

The pollen extracts that I have been using are from the Arlington Chemical Company and are put up in 3 c. c. vials in strengths of 1:10,000, 1:5000, 1:1000 and 1:100.

The patients are given an initial dose of one min. of the 1:10,000 solution of the pollen extract which they reacted to and a dose every five days. The dose was usually increased from one m. to three m., according to the severity of the symptoms and going from one dilution to another. In one patient a reaction of general malaise and dizziness was noted after receiving her treatment. On questioning her rather closely I found out that she had driven down the valley where there was plenty of sunflowers and she had received another dose by inhalation. That is the only case in which I noticed any reaction. These treatments were kept up until all symptoms subsided.

In my series of twenty-five cases treated during the hay fever season of 1921, fourteen cases were given relief by taking the injections; six cases were slightly improved and five did not show any improvement.

On testing these patients I used test solutions of the following: ragweed, goldenrod, sunflower, corn, cottonwood, rose, timothy and horse hair. I was unable to get pollens of sagebrush, mesquite, greasewood or the tumbling weed, but will have them next year. It was interesting to note that one case that was tested out reacted to corn and after concluding the treatment routine she still had symptoms. I again tested her and found that she gave no reaction at all to corn, showing that she was desensitized and that there was another causative agent.

Four of the cases were complicated by asthma, and three obtained complete relief from both the asthma and hay fever.

Wilson, (J. A. M. A. Jan. 17, 1912) advocates the use of calcium chloride in doses of not less than three grains daily and noticed that the hay fever nearly completely disappeared. Hallopeter (W. C.), in a monograph printed in 1916, states that from Wilson's article and from the report of Emmerich and Lowe on the use of calcium in hay fever that these papers furnished us with the only positive internal remedy and is worthy of further trial. Dr. Stark tells me that he has used calcium cholride in 30-grain doses with marked relief in some cases. I used calcium chloride in three cases that came to me near the end of the hay fever season and I gave them from one to three c. c. of a 5% sol. calcium chloride *intravenously* with remarkable results. The three cases were having marked symptoms when they entered the office and before I finished injecting the solution they each remarked that their nose was clear and felt dry. This solution should be injected very slowly. The calcium chloride intravenously is certainly entitled to further trial.

CONCLUSIONS

1. Hay fever is an anaphylaxis.
2. Causative agents are proteins from bacteria, pollens, animal emanations, and food.

3. Correct diagnosis can only be made by the skin test or some modification.
4. Where there is correct diagnosis, desensitization can be accomplished in the majority of cases.
5. Specific extracts and not mixtures should be used in the treatment.
6. Better results will be obtained when we have a more complete list of pollens found in this region, especially greasewood, mesquite, tumbleweed, sagebrush, and bermuda.

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THE TREATMENT OF HAY FEVER WITH ARIZONA POLLENS*

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The causative relation of the pollen of certain plants to the pollen diseases, seasonal hay fever and asthma, has been a matter of popular knowledge for a long time. Blackley[1], in 1873, published proof of this belief, with an excellent description of the skin test now generally employed; in his title he used the then common names: "Hay Fever or Hay Asthma." Treatment by means of pollen extracts was first attempted in 1905 and has been in common use since 1913. In the eastern part of the United States it is widely and successfully employed, and an extensive literature has grown up about it. Since this literature applies only in principle to the disease as it occurs in the Southwest the customary superficial review of it is omitted; reference will be made to such items as bear on the matter in hand. The purpose of this paper is to record observations on pollen disease as it occurs in Arizona, with the results of treatment of a few patients with local pollens.

The hay fever situation in the Southwest is peculiar, in that the local flora differs from that found elsewhere, the climate is subtropical with a pollinating season of about nine months, and large areas under irrigation are not intensively cultivated, so that weeds grow profusely. The lack of rainfall allows pollen to stay a long time in the air, and still longer in the dust. For these reasons the number of pollen sufferers is large; those sensitive to one pollen at the outset acquire multiple sensitization in time; pollen asthmatics from the East become affected by local plants after a breathing spell of two or three years; and, as population and irrigation increase, so does the amount of pollen in the air and the number of those made ill by it. Those with multiple sensitization have continual trouble for nine months, and some, as will be shown, have practically no free period.

The treatment of this condition has been rather unsatisfactory. Alkaline

*Read before the Maricopa County Medical Society, Phoenix, Arizona, February 16, 1922.

phosphates helped a few, mostly asthmatics; a certain number were helped, often temporarily, by intranasal surgery or topical applications, some others were benefited by bacterial vaccines or by solutions of pollens from plants not found in the Southwest. In connection with this latter group should be considered the results obtained by Sterling[2] with non-specific protein therapy. In the main the patients fell back on adrenalin ointment and the like; not a few were forced to leave the region half the year or altogether.

Experience elsewhere has fully demonstrated that the response to pollens and pollen therapy is highly specific. The identity of the plants locally important in this connection remained in doubt. Selfridge[3], working with Professor Hale, worked out the problem for the west coastal strip, Hall[4] made a contribution for California, and Key[5] for Texas. Scheppegrell[6], using all available sources, published a list of hay fever plants that failed to include the most important for Arizona. Recently, Watson and Kibler[7], working with Professor Thornber of the University of Arizona, made public the result of their three years' research. They attacked the problem in the only logical way, by collecting the pollens of many plants from all over the Southwest, and testing a large number of hay fever patients. They definitely identified the species etiologically important, and established on a sound basis the study of pollen disease as it occurs in this region.

In 1920 the writer, being unaware of Watson's work, began to test with solutions of all the commercially obtainable pollens all the hay fever and asthma patients within reach. The results were mainly negative; a few gave more or less positive skin tests with sunflower and alfalfa extracts, and some others, Easterners usually, reacted to ragweed. Treatment with commercial pollen extracts was attempted in a few instances, with no resultant benefit; one patient, treated with alfalfa pollen, became worse. In 1921, the task of collecting the Arizona pollens was taken up in earnest; some 22 pollens were collected from an area extending from Phoenix to Ash Fork, and quite a number of hay fever patients tested. Most of these were held over for preseasonal treatment, which 22 have already begun. A few were treated during the season, with fair results.

A word here as to protein sensitization, or allergy. Cooke[8] defines it as a natural hypersensitiveness to certain specific substances, usually proteins, occurring in individuals not as the result of immunologic processes. Its manifestations resemble those of anaphylaxis, but are much more intense. The capacity to develop sensitization was found by Cooke and Vander Veer[9] to be hereditary, being transmitted as a dominant trait. They find such capacity to be present in about ten per cent of all persons. When a sufficiently strong solution of the specific substance to which he is sensitized is brought in contact with an epithelial surface of an allergic individual, a characteristic reaction ensues, depending on the tissue; if it be placed on the abraded skin, an urticarial wheal; in the conjunctiva, redness and edema; on the nasal mucosa, hay fever; in the trachea, an attack of asthma. If the substance is ingested, a sharp gastro-intestinal upset takes place; and if it is absorbed unchanged or is parenterally introduced, depending on the quantity of the substance and the degree of sensitization there occur hay fever, asthma, urticaria, angioneurotic edema and sometimes collapse. Small and repeated doses partially desensitize the patient. Cooke[8] and Coca have shown that occasionally these reactions may depend on some group of the molecule that may be contained in chemically allied substances, although usually sensitization is to the entire molecule. For all practical purposes, however, the sensitization may be regarded as specific. The principles outlined above, applied to pollen disease, explain its symptoms, furnish the method of its diagnosis and provide the basis of its treatment. The diagnostic test is performed by placing upon a minute cut in the skin a small

amount of the suspected pollen,* moistened with N/20 NaOH, or a strong solution of pollen protein. A positive reaction appears within 30 minutes, in the form of a distinct urticarial wheal with raised irregular margin, at least 0.5 c. m. across. If the reaction is strong, as it usually will be if the pollen is causing hay fever, the margin of the wheal extends in pseudopod-like projections to a diameter of 1 c. m. or more; a finely mottled vivid erythema surrounds the wheal, and the area itches intensely.

Given uniformity of technic and of test solutions, the size of the wheal indicates the degree of sensitization to a particular pollen. A more accurate measurement is made by testing with serial dilutions. Of two or more pollens known to occur co-seasonally, the one should be used in treatment that reacts in the highest dilution, and treatment is begun with the serial dilution next higher than the last that gave a positive test.

The intradermal test is used by Cooke[10], Rackemann[11], Scheppegrell[12], and others. In my hands it has proved unsatisfactory because of the exquisite sensitization occasionally found in local patients with their prolonged pollen exposure. The technique of test and treatment detailed by Walker[13] in his numerous publications has been found very serviceable.

Because of not yet having all the important pollens, tests done earlier in the season are valueless for statistical purposes and are not reported. In the cases tabulated below, uniform technic and the full set of standardized pollen solutions were used. Similar solutions of unimportant pollens were used as controls, and if the history indicated it tests were made with eastern pollens and with epidermal and bacterial proteins. Only 10 of the pollens used figure in the table; the other 12 experimented with were found to be unimportant except as noted.

*Patients, in their first or second season, are preferably to be tested with whole pollens, as the skin is not yet fully sensitized.

Table I shows the findings in 35 pollen-sensitive patients, with the number of years since symptoms first began, and the hay fever season at the beginning and at present.

Table II shows the approximate pollinating seasons of the different plants implicated. The two will be discussed together.

There are at least three hay fever seasons in central Arizona; in some places they are separated, but in the irrigated country they overlap. The first is caused by the shade trees, mainly the cottonwood (populus Macdougali), and the Arizona ash (fraxinus attenuata). In the region under discusison (and all dates hereafter given apply to this region) they begin to pollinate early in February and their pollen is in the air until about April first.

The second season, covering April and May, is dominated by Bermuda grass (cynodon dactylon). This grass, introduced as a lawn grass, is spreading widely and is a formidable competitor of the native grasses. It blooms more or less all the year round, and patches with considerable pollen may be found at this writing (Jan. 15), but its first general florescence is in the spring. In June its pollen decreases until after the summer rains, when it comes on afresh. Johnson grass (Sorghum halepense) is a profuse bloomer from May till frost. It has a pollen almost as heavy as that of corn, but it sometimes gives severe symptoms to rural residents who are subject to massive exposure. Milo maize interreacts with it, affecting persons sensitive to Johnson grass.

The third season begins about July first or a little earlier, and continues till frost, not ending abruptly but gradually. It is due in part to the members of the amaranth and chenopodium families,—amaranthus palmeri, a. retroflexus, the common careless weed and pigweed; lamb's quarter, or goose foot, a name used for several species of chenopodium, and the three common sorts of atriplex or salt bush, locally and incorrectly called hop sage. These plants apparently interreact com-

TREATMENT OF HAY FEVER BY ARIZONA POLLENS

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TABLE I

Patient No.	Duration of Symptom	Season at time of Onset	Season at Present	Cotton-wood	Ash	Bermuda Grass	Johnson Grass	Chenopodium	Salt-bush	Pig-weed	Bur Ragweed	Worm-wood	Sun-flower Group	Other Sensitizations
1	Yrs. 8	Sept.	All year			++	(See Case Report)							Wheat proteins streptococcus
22	4	Apr.-May	Apr.-Nov.			++								
23	6	Aug.-Oct.	Apr.-Nov.			+++				++				
24	3	Apr.-May	Apr.-Nov.			++++								
25	3	Apr.-June Sept.-Nov.	Same			++								
26	3	Apr.-Oct.	Same			+++								
27	10	Apr.-Oct.	All year			++								Feathers Streptococcus
28	0	April	First Season			+	+							
29	1	Apr.-May	Same			++								
30	2	Apr.-May Sept.-Oct.	Same			+++								
31	0	Aug.-Sept.	First Season									++		Chloris
32	3	Aug.-Oct.	Same			++								(Chloris)
33	5	Aug.-Oct.	Same								++	+	+	
34	5	Aug.-Oct.	Same								++			
35	12	May-Nov.	Same				+++							Maize
36	14	Aug.-Oct.	Same								++	++	+	Streptococcus
37	15	Aug.	Feb.-Nov.		+++	++++	+++			+++				
38	22	July-Sept.	All year	++	+	++		+++	++	+++				
39	43	Aug.-Sept.	All year					+++	+	+++	++			Streptococcus Eastern Ragweed
40	16	June-Nov.	Same					+++	++	+++				
41	10	Apr.-May	All year	+	+	+++	+++			+++				
42	5	Apr.-May	Feb.-Oct.	++++	+	+++		++	++	+++				
43	4	Feb.-March	Feb.-Dec.	++++		++++				++++				
44	4	June-Sept.	Same					++	+++	++++				
45	4	Feb.-Nov.	Same	+++	+++	+++	++	++	+	++++				
46	5	Aug.-Sept.	Same				++					+++	+	
47	1	Aug.	Same				++++							
49	7	Apr.-May	All year		+++	++++				++++		+	++	
50	16	Feb.-March	Feb.-Nov.	+++	+++	++				++++	+++	++	+++	Rabbit bush
51	7	Feb.-March	Feb.-March June-Nov.	+++	+					+++				
52	10	Aug.	Feb.-Apr. Aug.-Nov.		+++	++++					++		++++	
53	4	June-July	Apr.-May			+++								Timothy
54	20	Apr.-May	Apr.-Oct.	+++				+	+	+++				
55	?	July-Oct.									+++	+++	++	
56	10	Aug.-Sept.	Apr.-Dec.	+			+				++			Rabbit bush

No Mark indicates no reaction, or a weak reaction, less than .5 cm. in diameter.
+ Means positive reaction, 0.5 cm. in diameter.
++ Means positive reaction, 1.0 cm. in diameter.
+++ Means positive reaction, 1.5 cm. in diameter.
++++ Means positive reaction, 2.0 cm. in greatest diameter, with spreading irregular margins.

TABLE II

POLLEN	February		March		April		May		June		July		August		September		October		November	
Ash		++	++	++	+							RAINS								
Cottonwood	++	++	++	++																
Bermuda				+	++	++	++	++	++	+	+	+	+	++	++	++	+	+	+	
Johnson								+	++	++	++	++	++	++	++	++	+	+		
Chenopod										++	++	+	+	++	++	+				
Saltbush										++	++	+	+	++	++	+	+			
Pigweed										++	++	+	+	++	++	++	+	+		
Bur Ragweed													+	++	++	++	+			
Wormwood													+	++	++	++	+			
Sunflower Group										+	+	+	+	++	++	++	+			
Chloris														+	++	++	+			

+ =Present but not Abundant.
++ =Abundant.
Records are for the first half and the second half of each month.

pletely as between different species of the same genus, and they show a certain tendency to interreact as a group. Only the strongest tests are shown in the table, but from the original records it appears that no one has reacted strongly to one without reacting more or less to the others. It has been thought advisable, therefore, to consider them as a biologic group but to test separately with the three members and to give treatment with the one causing the strongest reaction. After the summer rains all these plants pollinate profusely, and in the irrigated country the grasses, Bermuda and Johnson, which have decreased considerably in pollination during July, come on afresh. A new grass appears, chloris elegans. This grass interreacts with Bermuda and heightens its effect, so that late summer and fall hay fever is very severe in those with multiple sensitization.

In the middle and higher altitudes the chenopods and amaranths are found, but they are secondary in importance to the wind-pollinated compositae, chief of which are bur ragweed (franseria) and two or three species of wormwood (artemisia). Bermuda grass is absent and Johnson grass may be, but the chloris, the common name of which is supposed to be finger grass, plays an important part. Among the composites, as among the chenopods, there is a strong tendency to group reactions, and it extends to the common flowering compositae. These include sunflower, western goldenrod, and rayless goldenrod or rabbit bush*, asters, daisies, and many species cultivated as ornamental. Close exposure to these flowers brings on attacks in certain persons sensitized to the wind-pollinated compositae, and it is not at all inconceivable that in some cases the insect-pollinated plants may initiate the sensitization, as has been shown infrequently to be the case elsewhere.

Before leaving this phase of the subject, it should be recorded that the writer failed to obtain the spring pollens of the moderate and higher altitudes in working quantities and in this matter the report is incomplete.

Analysis of Table I shows that of 35 patients 19, or 54%, had most of their trouble from a single pollen, although 8 showed weaker reactions to other pollens, indicating that multiple sensitization was in process of development. Nine were due to Bermuda grass, 5 to the compositae, wormwood and bur ragweed, 2 to Johnson grass, 2 to the amaranth-chenopod group and 1 to chloris elegans. Six of these 19 patients had a season of six weeks, and the average season for the group is about three months. The average duration of their disease was four years. In other words, the early cases are first sensitized to one pollen.

The same was originally true of the 16 multiply sensitized patients; 15 of them had at first a short season, which usually had extended at both ends. Of this group 12 now have trouble from ash, cottonwood or both, and their dates of onset confirm the skin tests. Ten are sensitive to Bermuda grass, 2 strongly react to Johnson grass, while weaker reactions from this pollen are usual. Eight suffer from the amaranth-chenopod group, six from the compositae, and one from chloris. Four react to streptococcus, one to wheat proteins and one to goosefeathers. The average duration of hay fever in the multiply sensitized group was 10+ years, and excluding two complicated cases, the average hay fever season nine months.

The Bermuda-sensitized patients lived in the Salt River Valley; all those reacting only to the composites lived at moderate or high altitudes. The two reacting only to Johnson grass lived on ranches.

*The rayless golden rod (chrysothamnus), a plant which covers large tracts of uncultivated soil. It is about two feet high, has a rank odor, and in autumn bears clusters of inconspicuous yellow flowers which are followed later by the larger clusters (pappus) of feathery white seeds. According to the books, its common name is rabbit *brush*, as distinguished from the rabbit *bush* (franseria deltoidea) an entirely different plant mentioned by Watson and Kibler. Unfortunately, such of the laity as I have questioned do not make this distinction. The present state of Arizona botany is confusing. Texts vary considerably, and the names given as common ones frequently turn out to be locally unknown.)

It will be noted that the present article attempts to determine within a limited area the most important causes of hay fever. The findings coincide more nearly with those of Watson and Kibler than with those of Scheppegrell.

A word as to the common belief that hay fever is caused by roses and by cottonwood floss. A very strong solution was made from cottonwood floss taken from the seed pods before they were ripe. With this and with rose pollen all the earlier patients were tested, always with negative results. The cotton flies and roses bloom at the height of the first Bermuda grass season.

In Table I it is stated that 6 patients have hay-fever symptoms all the year round. This is intended literally, though it should be understood that their worst symptoms occur in the pollen season. Special study was given this group. Patients 1, 27 and 39 were found to have genuine hay fever with other sensitizations added, and by appropriate treatment all were relieved during the winter months. Patients 38, 41 and 49 react to nothing but pollens. All have Bermuda grass as their chief cause of trouble and since beginning preseasonal treatment two have been entirely relieved, for the first time in years while in their usual abodes. It seems fair to conclude that their mild winter symptoms were due to small amounts of Bermuda grass pollen.

Sixteen of the 35 patients have a positive family history of hay fever or asthma, sixteen a negative one, and three do not know. Five have had nasal operations, with temporary relief in four instances. Thirteen took either Eastern or Cailfornia pollen antigens the preceding year. One obtained 90% relief, one 50%, three others 25%, and eight were not benefited.

Intraseasonal treatment was attempted in 15 cases, and preseasonal treatment once.

Patient 1 had symptoms the year round, but was much worse in September. Tests had shown her to be sensitized to wheat proteins and streptococcus. Wheat was eliminated from her diet and an autogenous streptococcus vaccine given. She was almost entirely relieved until last April she came to Phoenix, where she had hay fever, and tests showed a strong reaction to Bermuda grass. She was given a course of Bermuda grass 1:5000, as she was very sensitive to it, and was free from symptoms last fall.

Patient 32, a boy of 17 from the same town. Hay fever from August to frost for three years. He reacted to none of the pollens known to occur in that neighborhood, but insisted that his trouble came from "buffalo grass." He escorted the writer to a field of chloris elegans. Bermuda grass gave a strong reaction, and three doses of 1:10,000 relieved his symptoms for the year.

There is no Bermuda grass within miles of the town where patients 1 and 32 live, so it seems that Chloris and Bermuda grass inter-react.

Patient 37—Hay fever for 15 years; when tested recently reacts strongly to ash, Bermuda, Johnson grass and pigweed; has a nine months' season. Hay fever came on, followed soon by asthma, at its usual time in February. She reacted to ash more than to cottonwood (whole pollens) and was treated with ash 1:10,000. She was 75% relieved until Bermuda grass came on in April. Because of the difficulty of getting an effective Bermuda grass pollen extract treatment was abandoned.

Patient 22 (referred by Dr. Willard Smith). Hay fever for four years; season the preceding year April to October, with lighter symptoms in midsummer. Reacted strongly to the whole pollen of Bermuda grass and was relieved noticeably by the skin test. This continued to be his treatment until a good Bermuda extract was finally obtained in May. One to 12,000 was given in ascending doses until June 30, though he was symptom-free. He had no further trouble, but is recorded as 75% relieved, on account of the prolonged early treatment.

Patient 23. Hay fever for six years, April to November, with a free interval in July. Found later to react to Ber-

muda and pigweed. Treated by large skin tests and later by Bermuda 1:5000, the last dose, 0.15 c. c., shocking him slightly. Following this he was entirely relieved unitl the middle of August, and his fall hay fever, usually severe, was light, and probably due to pigweed.

Patient 27. Mild hay fever symptoms all the year, but worse from April to October. Reacted to Bermuda, goose feathers, and streptococcus. Feathers excluded, streptococcus vaccine given, and four doses of Bermuda 1:12,000. Seventy-five per cent relieved; still has trouble on entering certain houses.

Patient 28. First season; reacted to Bermuda and Johnson grasses, but tests were barely positive. She was given a mixture of the two in 1:5000 strength on May 8, and every three days thereafter until May 26, when she was entirely relieved and had no further trouble during the year.

Patient 25. Hay fever for three years; reacts to Bermuda grass only. After six doses of 1:12,000 she reported herself as 75% relieved.

Patient 26. Hay fever for three years, with asthma, April to October. Reacts to Bermuda grass. Seen on May 21st, and given 0.05 c. c. of 1:1000. After this dose his asthma was severe but he had no more hay fever. Doses of 1:5000 solution were given twice a week and gradually increased. After the fourth dose he was free from symptoms but treatment was continued till July first. He was relieved for the rest of the year.

Patient 24. Hay fever for three years; Bermuda grass gave a violent skin reaction. He was treated over the same dates as patient 23, but with a 1:12,000 solution; nevertheless he was severely shocked after one dose; completely relieved.

Patient 31. First season; reacted to wormwood, and weakly to Bermuda grass, although there was no Bermuda grass where she lived. Six doses of wormwood pollen 1:2500 gave no relief. This patient was overdosed with wormwood pollen and probably was having trouble from chloris, which was present and blossoming at the time.

Patient 40. Hay fever and asthma for 16 years, not strictly seasonal but worst in summer. Tests showed strong reactions to pigweed, salt bush and chenopodium. Two doses of a 1:5000 mixture of these pollens were given, with no benefit. The patient refused further treatment, and she was right. She had a chronic suppurative ethmoiditis, which probably caused the asthma.

Patient 45. Severe hay fever for four years, February to November; multiply sensitized. She was seen in June, and given treatment with small doses of a mixture of the pollens then in the air, Bermuda grass, pigweed, and Johnson grass, 1:10,000. Her symptoms gradually lessened until on July 3rd, when treatment was stopped, she was 75% relieved. This relief continued until late in August, when pigweed came on in abundance and she suffered greatly.

Patient 44. Very severe hay fever for four years, June to September. Reacted strongly to pigweed, salt bush, and chenopodium. Eleven doses of 1:10,000 of a mixture of these gave practically no relief.

Patient 39 was relieved of his symptoms near the end of the pollen season. Pigweed 1:5000 and autogenous vaccine (streptococcus) were used simultaneously, so that result means nothing. Patient 36, treated at the same time and in the same way, got no relief. These cases are not included in the summary of results, nor is patient 49, who reacted to Bermuda 1:50,000 and was slightly shocked by testing with whole pollens. She was 50% relieved by repeated skin tests, and injections of her pollens were not attempted.

In summarizing the results of treatment, it seems desirable to regard the multiply sensitized as having two seasons. For example, patient 23 has hay fever from Bermuda and pigweed. He was treated early with Bermuda grass pollen and his early hay fever 100% relieved; but his late hay fever only 50% relieved. Thus these 13 patients

had among them 16 hay fever seasons. Considering them as 16 patients, five, or 31-plus per cent were completely relieved, the same number were 75% relieved, one patient 50% relieved and five, or 31%, were failures. Practically all the good results were obtained with Bermuda grass. Most of the patients were Bermuda-sensitized, a potent extract of this grass was obtained early in the season, and treatment was begun in the time of heavy pollination and continued into the period when the grass blooms less vigorously. This permitted the use of larger doses and made the intraseasonal treatment a preseasonal one so far as concerns the later season of heavy pollination. The best results were obtained by those who continued their treatment for several weeks after they were relieved.

PRESEASONAL OR PROPHYLACTIC TREATMENT

Twenty-two patients, all sensitized to ash, cottonwood or Bermuda, some to all of these, have begun preseasonal treatment. When possible the method of Walker[13] is being followed. He begins treatment about three months before the usual time of onset of hay fever with "from 0.1 to 0.2 c. c. of that dilution next higher than the highest one that gave a positive skin test * * * given subcutaneously once a week, and each week the amount of the extract gradually increased, * * * until one or more doses of the 1:100 are given." He stops treatment before the pollinating season begins, by preference. His careful analysis of his results ,and the extent of his experience, justify this method.

Rackemann[11], working in the same city, starts with three times Walker's initial dose and completes his desensitizing course in six weeks. Cooke[9] grades the strength of his solutions by their nitrogen content, but his dosage and interval are about the same as Rackemann's, except that he continues treatment nearly to the end of the hay fever season—a method obviously unsuited to Arizona. Scheppegrell[12] gives smaller doses at shorter intervals. All these men get good results. The essential thing seems to be to start well in advance of the hay fever season, to use the right pollen, not a mixture, and to give as much of it as the individual patient will safely tolerate. A large local reaction, persisting over 36 hours, or a constitutional reaction of any severity, are indications to repeat or reduce the dose and to lengthen the interval between doses.

In the series now being treated, nine are multiply sensitized, and the pollens so far as possible are being kept separate and given on different days. The results of this method will be interesting, as compared to those obtained by using pollen mixtures, which inevitably some will insist on doing.

SUMMARY

Hay fever patients residing in central Arizona have been tested with local pollens, and certain of these have been identified as causes of hay fever. The pollinating season of plants mainly responsible for hay fever in this region has been shown, and their relation to the divisions of the nine-months-long hay fever season has been indicated. The tendency of allergic patients to become multiply sensitized has been shown.

Thirteen patients with sixteen hay fever seasons were given during-the-season treatment with extracts of local pollens. Eight patients with ten seasons were benefited, as was one patient who received preseasonal treatment. The principles of diagnosis and treatment worked out for pollen disease in other sections have been successfully employed.

The causes of spring hay fever in the higher altitudes of this region were not investigated.

CONCLUSIONS

1. Local pollens producing disease are easily identified by the skin test.

2. Treatment with extracts of pollens so identified promises good results.

3. Treatment with one pollen gives better results than treatment by a mixture of pollens.

4. Because of its double season of profuse pollination, with an interval of lesser activity, the intraseasonal treatment of properly selected patients with Bermuda grass pollen is unusually successful.

It is a pleasure to acknowledge my indebtedness to Dr. Warner Watkins, Dr. M. J. Keeney and Dr. Willard Simth for their assistance in this investigation.

St. Luke's Home.

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INTRANASAL PRESSURE

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It is not an uncommon thing to accept a patient's diagnosis of rhinitis and begin treatment without examination. The patient is given some pills to stop the discharge and the spray is used for a number of reasons. If there is pain in the region of the frontal or maxillary sinuses, aspirin is given. Usually, after a number of treatments, the patient feels better, but, as soon as treatment is discontinued, begins to complain again. Should such a case apply for treatment during the summer months, a diagnosis of hay fever is made and, in addition to other treatment, vaccine is used. The result is about the same. However, there are cases that do not respond to such treatment, but are followed by meningitis and death. These cases die because drainage of the nasal accessory sinuses had been obstructed and, without careful examination, could not be re-established.

To make an examination it is necessary to have a good light. Use a small, short-bladed speculum that will dilate the nares without distorting the nose. When a long-bladed, heavy instrument is introduced into the nares much of the mucosa is covered and the turbinate bodies are pushed out of position, making it impossible to get a correct view of the nasal passages and concealing the irregularities that are causing discomfort or endangering life.

The first things noticed during examination will be the condition of the mucous membrane, the amount of room in the nose and whether there is discharge, crusts, ulcers, perforations or polypi; the history gives us an idea what to expect. Next, examine the septum and note whether it is deviated from the median line, has ridges or spurs, or if it is thickened. Inspect the inferior turbinate as to size and position; notice if it touches the floor or the outer wall of the nose or the septum. If it touches the septum determine whether the turbinate is hypertrophic or hyperplastic, or if the septum is deviated, thickened or has ridges or spurs at this point. The nasal duct drains into the inferior meatus under this turbinate. Inspect the middle turbinate in the same manner. The maxillary, frontal and ethmoidal sinuses drain into the middle meatus under the middle turbinate and the posterior ethmoidal and sphenoidal sinuses drain into the superior meatus above it. If polypi are present, determine their attachment in order to discover which sinus is involved, as well as to facilitate their removal. Now examine the other side of the nose, use mirror for posterior examination and then make your decision as to what should be done for the patient's relief. Remember that there may be irregularities in the cartilaginous or bony structures without intumescence and if such is the case little or no treatment is necessary. However, it is usually on account of the intumescence that the examination is made.

When two mucous surfaces within the nose, touch each other they begin to swell and the swelling may be so great that air is excluded; the turbinates may be hypertrophied or hyperplastic, or enlarged as the result of polypoid tissue or there may be polypi present; the septum may be deflected or have large ridges and spurs. These cases are generally correctly diagnosed and given relief. Quite often there is enough room along the floor of the nose, so that no complaint is being made about inability to get air; in fact, the patient will take particular pains to show you that breathing is not obstructed on that side, and yet the intumescence may be so great in the upper part of the nose that drainage is seriously interfered with. These patients are not trying to deceive you but are allowing you to deceive yourself, and these are the cases in which, as a result of an incomplete examination, the point of contact between two mucous surfaces is not located and indifferent treatment may be given through a period of months or years, or until an emergency arises. A common cause of such a condition, and one that is most often overlooked, is a thickened septum, high up, with or without any other deviation whatever.

A history of rhinitis, hay fever, pharyngitis, facial or orbital pain, tinnitus aurium or hardness of hearing requires a careful nasal examination.

It is not the purpose of this paper to go into the details of trans-illumination, x-ray and other methods of diagnosing sinusitis or the operations for draining a sinus that is full of pus; nor are we interested in the middle ear or mastoid, except as they are the result of nasal intumescence and it is the relief of the intumescence that we are considering at this time.

The treatment of intranasal pressure is surgical and affords considerable opportunity for the exercise of good judgment. The operation of choice is the one that will correct the irregularities, give proper drainage and air, with the loss of the smallest amount of mucous membrane.

Hypertrophied turbinates must be carefully studied and just enough removed to prevent touching an opposing mucous membrane and should never be entirely removed if this can be avoided, on account of the resultant atrophy, with its dryness and crusts. Better operate twice than remove too much, since painting turbinates, with the intention of stimulating growth, is a slow process and requires considerable enthusiasm.

Polypi, and degeneration of the posterior and anterior tips of the turbinates must be removed; diseased tissue must be removed regardless of the amount or where found.

Intranasal pressure is due to deviation of the septum more often than any other cause and in these cases the submucous resection of the septum should be done. The results of the submucous resection, when well done, are more gratifying than that of any other operation within the nose. Too often the turbinates are operated when the irregularities are in the septum. There is probably no other organ in which healthy tissue is so recklessly sacrificed as within the nose, and this is not always the result of an incomplete examination, but may be on account of erroneous ideas of nasal function.

In conclusion, it might be well to emphasize the fact that intranasal irregularities may be operated when diagnosed; that there is no necessity for waiting until further complications arise; that the comfort and safety of the patient depends upon such decision.

PUBLIC HEALTH*

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Winslow defines Public Health as "the science and art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of personal hygiene, the organization of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will insure to every individual in the community a standard of living adequate for the maintenance of health." It is a science or art which has been built up from the work of physicians, engineers, sanitarians, biologists, sociologists, epidemiologists, statisticians, chemists, economists, and others. Fundamentally, it is based upon the study of life and its processes, individually and collectively in regard to duration and normality.

Public health should be governed largely by our knowledge of the rates of births and deaths, the number, character and duration of diseases, and the amount and kind of physical and mental defects. This necessitates the prompt collection of accurate statistics, their correlation, and intelligent interpretation. The more faithfully this is performed, the greater our knowledge of conditions with which we have to deal, the better we can apply the most suitable remedy, and more satisfactory will be the results obtained. Indeed, without statistics, public health is like a ship at sea without a compass, without aim, without application and without results. Sir Arthur Newsholme said during his recent lecture before the New York Academy of Medicine: "I may be excused from quoting English figures as our vital statistics are more accurate and complete than those hitherto available for the United States. Parenthetically, may I say that it is a continual source of astonishment to me that in some states your death statistics, and in many more states, your birth statistics should still be so dubious in their quality as to cause hesitation in utilizing them. And this in a country which, in other respects, combines the highest business qualities with an underlying idealism, which emerges in all important crises." To this I can only

*Read at the Arizona State Medical Association Meeting at Nogales, Arizona, April 15th and 17th, 1920.

add, that Arizona is not, I am sorry to say, within the registration area.

Public health work in the past has shown remarkably effective results in the control and eradication of communicable diseases. Bubonic plague, cholera and yellow fever are medical curiosities. Smallpox, typhus, and typhoid are rapidly becoming so, while the incidence of tuberculosis is, by the best figures obtainable, declining. The more recently inaugurated campaign against venereal diseases is in most efficient hands, and should result in a great saving of life and of much disablement. Public health work along the lines of tuberculosis should not lose sight of the theory that as we eradicate an infection, we also tend to eradicate or prevent other infections. Allen Hazen said as long ago as 1904 that "when one death from typhoid fever has been avoided by the use of better water, a certain number of deaths, probably two or three, from other causes, has been avoided." Also, in this connection, Sedgwick and McNutt state that "they are forced to the conclusion that a considerable portion of the decline in mortality from tuberculosis in Lawrence and Lowell during the years immediately following a change from a polluted water supply, was due to that change." Again, Raymond Pearl, in a recent paper dealing with our influenza epidemic said, "Communities, in some degree organically unsound as indicated by relatively high normal death rates from phthisis, organic heart disease and nephritis, were less able to meet successfully the attack of a vicious epidemic invader, than were those in which these biologic conidtions did not exist." As we have less typhoid, we have less tuberculosis. As we have less organic heart disaese and nephritis, both of which are largely infectious diseases, we have fewer deaths from influenza, and undoubtedly fewer deaths from tuberculosis. And, lastly, if we have less focal infection, particularly of teeth, gums and tonsils, the death rate, not only for infectious diseases but for all diseases, will, without question, be greatly reduced.

The eradication of organic diseases of the heart and kidneys, the two conditions that contribute so very largely to our list of death and sickness is almost entirely in the line of prevention, and when we take into consideration the relative importance of these diseases, public health should bend every effort to reduce them to the minimum. As these diseases begin to show themselves early in life, it is necessary to start preventive measures in the very young, probably best in the preschool age, by using every means in our power to prevent infections of all kinds, measles, scarlet fever, whooping cough, colds, diseased tonsils, adenoids, and especially, infected teeth and gums. Also, the child's resistance to infection should be built up, its nutrition should be maintained at the maximum, and its physical vigor and endurance promoted by suitably regulated rest ,exercise and recreation. These measures started during the preschool age should be maintained throughout childhood and school life.

When an individual leaves school to enter upon the stress and trials of his life's work, he should be, and he has a right to demand that he be, not only physically and mentally well trained and sound in every respect, but that he be so well drilled and exercised in the care and preservation of his body that it will carry him to a good old age, at least free from preventable diseases. It should be emphasized that this work is purely public health work. It is for the prevention of disease, the prolongation of life, and for greater efficiency during life. This work should be part of the organized effort of every community, and should be carried on through the community officers of public health, and by no other agency. Relative to this, McLaughlin of Washington, D. C., says: "The aims of health departments are, the eradication of preventable disease, the elimination of corrigible physical and mental defects and the maintenance of all individuals in the best possible physical and mental condition."

Public health, to be successful in any community, should have the hearty cooperation, backing and intelligent understanding of the individuals of that

community, and to have this, it is necessary that they be frankly dealt with, instructed and educated in the knowledge of public health. Every opportunity should be utilized for talks, lectures, exhibits and courses in study pertaining to public health.

In the furtherance of this idea there has been recently established in Bisbee a health center whose aim is to stimulate and encourage an interest in personal, community, state and national health conditions, first, by centralizing and correlating all local health activities; second, by the diffusion of knowledge of health and its preservation; third, by encouraging, supporting and assisting health officials in the proper performance of their duties; fourth, by investigating conditions appertaining to health and its betterment; fifth, by initiating and supporting needed health legislation.

Its organization consists, (1) of a central committee of three appointed by the executive committee of the Red Cross Chapter, one member from the Chamber of Commerce, one from the American Legion and one from the Red Cross, one member to be a woman,—this committee shall organize, direct and be responsible for the policies, activities, administration and results of the health center; (2) of an advisory committee composed of representatives from the various civic organizations of the community and such other persons as the central committee may appoint; (3) of sub-committees appointed from the members of the advisory committee on administration, legislation, instruction, investigation, schools, centralization, consultation, etc.

The organized personnel shall be composed of persons of recognized standing in the community and as representative as possible, public officials and medical men being ineligible. The underlying motive is education of the public in constructive health work, along preventive lines.

In concluison, I wish to quote from an article by Dr. L. Haden Guest, an English medical officer, written in the trenches in France: "Here (referring to the fighting lines) they are equipped with everything that can be given, but they cannot be equipped with a physical health and efficiency greater than their childhood has left them. Only care of childhood can give us adult men of that force and vigor which is latent in our race, but which often bad conditions deform or suppress."

THE PREVENTION OF ACIDOSIS IN THE TREATMENT OF DIABETES: *Abert.*, Journal-Lancer, Jan. 15, 1922, p. 33.

This paper follows the work of Joslin, and discusses the chemistry of acidosis; his conclusions are:

(1) Acidosis is not an acid condition of the blood and body fluids but a depletion of the alkali reserve of the body.

(2) The cause of acidosis is the overproduction of non-volatile acids, which fix base and deplete the alkali reserve.

(3) The great source of these acid bodies is the combustion of fat without the presence of carbohydrates.

(4) Consequently, to prevent or treat acidosis, we must avoid all fat and push the carbohydrate intake.

(5) The rational treatment of diabetes must ever be based on these principles.

(6) In the treatment of coma, alkali therapy is dangerous and should be abandoned.

A DISCUSSION OF THE NEWER METHODS IN THE TREATMENT OF DIABETES: *Joslin*, Sou. Med. Jour., February, 1922, p. 93.

In this address before the Southern Medical Association, Joslin referred to the fact that the mortality from diabetes had been reduced from the 1914 figure of 28%, to 2% in 1920. This has been the result of the clinical application of the results of laboratory workers in metabolism. He emphasizes the fact that, while the coma of diabetes is due to acidosis, alkalies will never prevent nor relieve diabetic coma. In his last 525 cases, no alkalies have been given. He regards the three great advances in the treatment of diabetes as the banishment of drugs from the treatment, the recognition of fat as the cause of coma and the treatment by undernutrition.

THE TREATMENT OF ACUTE PERITONITIS*

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The term peritonitis, when applied with the usual careless unscientific generality, covers as many abdominal ills as charity does moral ones. The reaction following the introduction of a sterile substance into the peritoneal cavity, or the salutory inflammation which results in limiting adhesions around an infective focus, are frequently described in the same terms as we define the condition caused by an acute bacterial infection, with its train of local symptoms, and showing the clinical effects of toxemia, and septicemia. This latter condition has, at some time, been further, and more aptly, described as acute peritoneal infection, the treatment of which is the subject of this paper.

The treatment of acute peritonitis, while logical and based on sound physiological principles, is more or less inefficient and uncertain. Until the unknown equations of individual resistance and the difference in virulence of the same type of infection are solved, we can only expect a comparative efficiency and accuracy. If this were not true, surgery, as applied to the abdomen, would indeed be an exact science, and its possibilities could hardly be proscribed. We may say that the discovery of anesthesia made abdominal surgery possible; that the introduction of antisepsis and asepsis made it practical; and that the perfect development of efficient and accurate treatment of peritoneal infection would make it ideal.

The peritoneum is a serous membrane, which lines the abdominal cavity and partially invests the viscera contained in it. It is extensive, being only a little less than the cutaneous surface. It consists of an endothelial covering upon a limiting membrane, beneath which there is a framework of connective tissue, richly supplied with blood vessels and lymph channels. The classical illustration of a closed sac superimposed upon the abdominal viscera is apt. The peritoneum covering the viscera is merely a number of reduplications of the parietal peritoneum, and the peritoneal cavity contains nothing but the omentum, and is nothing but a giant lymph space.

One of the functions of the peritoneum, the study of which is of the greatest practical importance in the treatment of peritonitis, is its absorptive power. The normal peritoneum has the power of absorbing from 3 to 8 per cent of the entire body weight in one hour. All portions of the membrane possess this power, but not in the same degree. The activity of absorption of any area is in direct proportion to the number, and size of the lymphatics draining that area. Clark says: "Fluids and solids may pass through the endothelial layer of the peritoneum, the fluids in many places, but the solid particles, as bacteria, only by means of the omentum and the diaphragmatic peritoneum. The anatomical reason for this is that under the endotheleum of the diaphragmatic and enteronic regions are numberless vast lymph spaces, while the lymphatics of the pericecal, pericolic, and pelvic regions are comparatively few and small. This fact accounts for the virulence of infection of the former and the tolerance of the three latter regions.

Absorption from the peritoneal cavity is done almost entirely by means of the lymphatics. The route of the peritoneal lymph is to the mediastinal nodes, and from these, by means of the thoracic ducts, to the subclavian veins. This absorption has been demonstrated by numerous observers to occur quickly. Woolsey found that after injecting a solution of coloring matter into the peritoneal cavity of a guinea pig, the animal could not be killed quickly enough to find the mediastinal glands free from such substance. Muscotello

*Read before the El Paso County Medical Society, April 19th, 1920.

sums up the result of his experimentation along this line in these words: "That absorption from the peritoneum is practically nil except by the lymphatics, the blood vessels playing an indifferent, if any, part in that action."

These foregoing facts have been abundantly proven and are true. Then it must follow that the clinical phenomena which we associate with acute peritonitis, are caused by the lymphatic absorption of toxic material from the peritoneum, which material being poured into the circulation, causes a general toxemia. I am led to discuss this phase of the matter, because of certain teaching, which, if true, makes the treatment as generally accepted and practiced, illogical and empirical. In one of the most recent and popular text books there is this statement: "The danger of peritonitis is not so much from the absorption of toxic material from the peritoneum, as from paralysis of the intestine due to infiltration of its walls with the products of inflammation." If this be true, then the use of the semi-sitting position and the inhibition of peristalsis are absurd, for these methods only tend to minimize the systemic, and not the local absorption. If this be true, then the treatment of twenty years ago—salines, copious irrigation, and massive drainage through opening, and counter opening, would be more logical than that of the present day.

But it is not true. The paralytic condition of the intestine in acute peritoneal infection is caused by a general sympathetic nervous system poisoning, and is an effect rather than a cause. In all diseases which are characterized by the production of toxins which greatly involve the sympathetic system, notably typhoid fever and pneumonia, there is frequently present the same condition, except in degrees. In acute peritonitis there are invariably sympathetic phenomena—as disturbance of the cardiac, respiratory, and vaso motor centers, which precede or, at least, are coexistent with the abdominal sympathetic involvement, which causes this paralytic condition of the intestine. Furthermore, the most acute, virulent forms of peritoneal infection may, and often do, produce death in a few hours, leaving hardly a macroscopical trace in the peritoneal cavity or the walls of the intestine.

The treatment, therefore, is that of a general toxemia and may be classified as preventative, curative and symptomatic.

PREVENTATIVE TREATMENT

Preventative treatment demands three essentials:

First: Removal of the source of infection, which may be done by the excision of a part or the whole of an infected tissue, or by draining an infected area.

Second: By prevention of the spread of infection. Avoid irrigation of the peritoneum when possible, for this will cause a further dissemination of infectious material, and the establishment of veritable cess pools in the most dependent portions of the peritoneal cavity, a condition most favorable to the further development of peritoneal infection. Avoid, in so far as possible, breaking down adhesions around an infected area, and wall off carefully before attacking a possible focus of infection.

Third: An adequate technic. The peritoneum possesses a remarkable facility for the removal and neutralization of toxic bodies, due to the great bactericidal properties which it has. These powers are dependent for their proper functioning upon the normal condition of the endothelial cells. Flexner says, "In order that pathogenic bacteria introduced directly into the peritoneal cavity may cause a peritonitis, general or circumscribed, the normal condition of the peritoneum must in some way be modified." This protective property is diminished in direct proportion to the amount of injury done to the peritoneum. Then avoid vigorous sponge cleansing, or unnecessary manipulation of the peritoneal surfaces. Do not allow the peritoneum to become chilled or dry. Avoid, in so far as possible, doing anything which will traumatize, or devitalize the peritoneum. Avoid any technic which will cause depression or shock, as an improper anesthetic, traction on the mesentery or parietal peritoneum, rude manipulation, and unnec-

essary exploration. Avoid waste of time. Find what is to be done, do it, and get out. These common surgical sins tend indirectly to further the development of peritoneal infection, because they lower the resistance of the patient. As Nancreede says, "No perfection of aseptic technic, will invariably render innocuous, faults or misfortunes of operative technic."

CURATIVE TREATMENT

The curative treatment of acute peritonitis, consists in limiting the absorption of toxins, and,in diluting, and promoting the excretion of them when absorbed.

The absorptive power of the peritoneum is diminished by the backward pressure of venous engorgement which, in turn, produces a lymphatic obstruction. This end is most practically attained by intravenous infusion, by hypodermoclysis or proctoclysis.

Intravenous infusion with Ringer's or normal saline solution is more indicated in emergencies, where there is not time for the slower methods. It is well to bear in mind Murphy's dictum, that all intravenous medication is major surgery. Don't give too much, as this may seriously embarrass the heart, and, if possible, always use a freshly distilled solution ,as an unfortunate reaction at this time might destroy the balance which the patient has thus far maintained.

Hypodermoclysis with normal saline does not fill up the circulatory system as rapidly as the preceding methods, and for that reason is not so apt to have an untoward effect. Crile advocates the use of 2500 to 3000 c. c. of saline solution by hypodermoclysis every 24 hours until the danger point is passed, as an adjuvant to proctoclysis, which is begun at once and continued as long as tolerated.

Proctoclysis may and should be used ad libitum. It will not embarrass the circulatory system, and it allows the use of antiacidosis agents, as well as nutriment materials. Many solutions are used, from plain tap water to heavy saline,—the most popular formula, probably, being glucose and sodium bicarbonate 5% each. It would be well if these solutions were better standardized, so that a more practical application be had of the laws of osmosis.

Filling up the circulatory system by the above methods not only limits absorption from the peritoneum, but causes increased dilution and elimination of toxins; it allays hunger and thirst, and reduces temperature.

Absorption of toxins from the peritoneum is limited by position. Regardless of posture there is a normal force which propels intraperitoneal fluids and solid particles toward the diaphragm. Buxton and Torrey have proven that after the injection of bacilli into the peritoneal cavity, there is an immediate rush to the lymphatics of the diaphragm ,thence to the mediastinal nodes, thence to the thoracic duct. It has been proven that by injecting bacilli into the peritoneal cavity of a dog, suspended head down, the bacilli could be demonstrated in the mediastinal glands in six minutes; while the same experiment, but with the animal suspended in the reverse position, showed the mediastinal nodes free from the bacilli for nearly five hours. We make application of this principle in the semi-sitting or Fowler position.

Therefore, as soon as the patient has recovered from the shock incident to operation, he should be placed in as nearly a sitting position as practicable. This drains the toxic material away from the most dangerous areas, to ones of comparative safety, and in this way not only limits absorption, but materially assists cardiac and respiratory action by minimizing the intraabdominal pressure against the diaphragm.

Absorption from the peritoneum is limited by controlling peristalsis. If this be not done, limiting adhesions will be unformed, or broken down, and infection be carried to other parts of the peritoneal cavity. To control peristalsis we have these agents,—complete abstinence of anything by mouth, avoidance of high enemas, and the use of opium. Opium not only minimizes peritalsis, but it protects the patient from nerve exhaustion, and consequent shock. Crile advocates administering opium in this conidtion, until the respiratory rate is reduced to 12 or 14 per minute.

SYMPTOMATIC TREATMENT

Gastric lavage is of the greatest value in peritoneal infection. It removes the backed up duodenal contents which are exceedingly toxic, and is further indicated because it minimizes the gastric pressure against the diaphragm.

As the immediate cause of death in acute peritonitis is from vaso motor paresis, then adrenalin is of value,—at least theoretically—in increasing vascular tension. Pain is, of course, controlled by opium. Cardiac and respiratory stimulants should be used as needed. It is not practicable to indicate by any routine treatment the employment of these remedies. They are beneficial agents, and must be applied according to the need of the individual.

Treatment of acute peritonitis by draining the thoracic duct. The reason for this is based on the following facts:

First: That death from acute peritonitis is caused by a general toxemia, and that intestinal, respiratory, cardiac, and vaso motor disturbances, are but local or special manifestations of this toxemia, which is produced by the absorption of toxins from the peritoneal cavity.

Second: That this absorption of toxins is nearly entirely carried on by the lymphatics ,and that these lymphatics empty this poisonous material into the mediastinal glands, and from these it is poured into the circulation principally, if not entirely, through the thoracic duct. This being true, it is only reasonable to assume that the prevention of the entrance into the circulatory system of this toxic material, by drainage, or section of the thoracic duct, should prove of great value.

The thoracic duct is practically inaccessible for its entire course, except at the base of the neck, where it curves downward, forward ,and outward, and empties into the subclavain vein at its angle of junction with the left internal jugular. At this point it becomes comparatively superficial, being covered only by the skin, platysma, sterno mastoid muscles, and cervical fascia. Drainage of the thoracic duct may be most readily done by the following method. Sand bag under base of the neck, a little to the left. Head turned to the right side; left shoulder depressed. Three-inch incision along the posterior border of the sterno mastoid followed by partial resection, and retraction of this muscle. Incise the deep cervical fascia, and by careful dissection locate the internal jugular. Follow this to the point of junction with the subclavian vein, where the thoracic duct may be found and resected. The only disadvantage, or danger of this operation is that incident to all operations. The advantage is, that it might afford relief for a condition which is only too frequently hopeless. This fact, together with the sound anatomical and physiological principles on which it is based, should make it worthy of at least a trial.

ARMY EXPERIENCES WITH TENDON TRANSFERENCE: *Starr*, Jour. of Bone and Joint Surg., January, 1922, p. 2.

The principles requisite to success in this type of surgery is laid down by the author as follows:

(1) Whenever possible, muscles having similar actions to the ones they are to replace should be used; (2) Where only a portion of a tendon is to be transferred, it MUST have the same action as the muscle it is to replace; (3) Line of pull should be straight; (4) Fixation of the transferred muscle should be with a good deal of tension; (5) Any deformity due to contraction of tissues should be overcome before transfer of muscles is attempted; (6) Sheath of the muscle replaced may be used for the new tendon, but usually transferred tendons are run in the subcutaneous fatty tissue; (7) In the lower extremity, the tendons transferred should be inserted into bone or periosteum—in the upper extremity, attachment of tendon to tendon has been satisfactory; (8) Adequate fixation of tendon to tendon; (9) Immobilization for three weeks; (10) Expert training afterwards.

A number of case reports, chiefly of transference after musculospiral injury are given.

TENDON TRANSPLANTATION IN THE FOREARM*

R. D. KENNEDY, M. D., F. A. C. S., Globe, Arizona.

Tendon transplantation in the forearm, following injuries to the musculospiral or posterior interosseous nerves, which are not susceptible to repair.

When the *injury to the musculo-spiral* is above the nerve supply to the extensors of the wrist, it is necessary to transplant the pronator radii teres into the paralyzed extensor carpi radialis longior and brevior. In doing this, one must bear in mind the very short tendon of the pronator radii teres.

An incision is made over the insertion of the pronator radii teres, the supinator longus retracted inward exposing the pronator. With a knife, divide the periosteum around the insertion of the pronator and, with a periosteal elevator, separate the tendon from the bone taking with it the periosteum. In attempting to do this without taking the periosteum, the tendon, which is very short, is liable to be so frayed that there will not be enough left to transplant.

With the tendon separated and the muscle freed for a short distance upward, the extensor carpi radialis longior and brevior are exposed through the same incision lying about a half an inch to the outside. The wrist is then dorsoflexed and the tendons drawn up sufficiently to keep it in this position. A slit is made laterally through these tendons and the tendon of the pronator drawn through and sutured with chromic catgut. In suturing, only one-half of the transplanted tendon is sutured to one-half of the tendon into which the transplant was made, so as not to interfere with the nutrition of the tendon. Catgut is used in place of silk as there was thought to be fewer adhesions and less interference with function.

The assistant must be careful not to allow the wrist to become flexed. The opening in the sheath of the tendons is repaired as much as possible with plain catgut. The small skin incision is now closed. The rest of the operation is the same as used for destruction of the posterior interosseous nerve.

For transplantation *after posterior interosseous nerve injury*, an incision is made in the skin beginning about two inches above the styloid process of the radius, a little to the anterior surface, running down to the insertion of the adductor longus pollicus, from here swinging in a circle across the dorsum of the hand about three-fourths of an inch below the radio-carpal joint. This part of the incision is so placed as not to have the line of skin suture and tendon transplant superimpose thus doing away with any possible adhesions between line of skin suture and transplant. The incision now swings upward outside the styloid process of the ulna, and extends up the forearm about two-thirds of the way to the elbow, to enable the operator to dissect the flexor carpi ulnaris free well up towards its origin, so that when transplanted it will lie on a straight line from its origin to point of transplant. If this is not done and the tendon is transplanted with a curve it will fail to functionate properly. The skin flap is dissected back on the dorsum of the hand to expose the tendons of the extensors of the fingers and thumb.

The flexor carpi radialis is now exposed about the junction of the middle and upper thirds of the arm and isolated through a small incision directly over the lower end of the muscle belly. The tendon is divided at its insertion and withdrawn through this opening. With a blunt instrument a new path is made from the styloid process of the radius to the small opening through which the muscle was withdrawn, and the tendon brought down through this path and transplanted into the adductor longus pollicus and the two extensors

*Read before the Medical and Surgical Association of the Southwest, at El Paso, December, 1919.

of the thumb, after the thumb has been extended and abducted by the assistant. This transplant is done in the same manner as the previous one by making a small slit in the tendons and drawing the transplanted tendon through the opening in such a manner that the thumb will be held in extension. The tendons are now sutured in the usual way and the sheaths repaired as well as possible to prevent adhesions. The flexor carpi ulnaris is now divided at its insertion in the pisiform, care being exercised not to injure the ulnar nerve at this point as it lies very close. The muscle is dissected up to a point opposite the junction of the middle and upper third of the forearm. The tendon and muscle are now swung over the ulna and inserted into the extensors of the fingers in such a manner as to give it a straight pull, the fingers and wrist being extended. This transplant is done the same as the other.

In closing the skin, care must be exercised to get it back in place along its former line; the hand being dorsiflexed makes this somewhat difficult so it is better to suture the angles first and see if there is much tension of the skin over the dorsum of the wrist.

The hand is put up on a cockup splint with the thumb, finger and wrist extended. At the end of ten days a few gentle passive movements are begun. At two weeks a few active movements are begun daily, teaching the patient to use the transplanted flexors for their new function. At three weeks the splint is discarded in the daytime but continued at night for another week, after which time no appliance is used. By this time, the patient has learned to use the transplanted muscles very well and in a short time these movements become so automatic that the patient never gives them a thought.

A CASE OF SYPHILIS WITH BONE LESIONS*

DAVID C. DODDS, M. D., Albuquerque, N. M.

The case to be reported probably presents little that is not well known. The interest is in the general character of the case; in the history of past positive lesions, past doubtful lesions and in the present lesions; in the question as to whether the case is one of hereditary or of acquired syphilis; and, lastly, in the progress of the case under treatment. In this connection, I wish to thank Dr. Van Atta for his interest and advice, and for the series of follow up plates which has made it possible actually to watch the process of repair taking place.

CASE REPORT

FAMILY HISTORY: Father healthy, of healthy parentage; has a well compensated mitral lesion; admits gonorrhea but denies syphilis. Mother healthy, of healthy parentage; no miscarriages. Three children; one stillborn at term, a large child (11 lbs.), perfectly developed, evidently a birth injury; girl of ten years, healthy, at this time 52 inches in height and weighs 60 lbs.; the patient, a girl of 12 years, is 50 inches high and weighs 45 lbs.

PAST HISTORY: As a child, patient had been healthy up to the age of seven. Photographs previous to that time show her to have been a rather fleshy child. At seven, she had an attack diagnosed as typhoid; it appears that a Widal test was made; at any rate, the diagnosis would, ordinarily, not be questioned. Recovery was slow and, in fact, the previous health was never regained. The throat now began to give trouble and, after a time, the tonsils were removed. No improvement followed this. Just before the typhoid

*Read before the Thirtieth Annual Meeting of the New Mexico Medical Society at Albuquerque, April 29th and 30th, 1921.

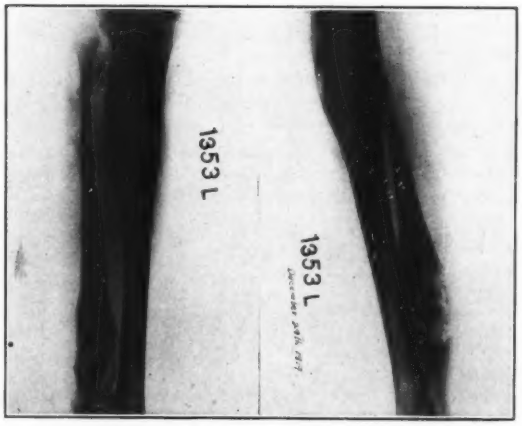

Fig. 1. Made Dec. 29, 1919, showing syphilitic osteomyelitis of lower third of fibula and upper third of tibia.

attack, the family had gone to a southeastern state. Afterward they removed to Michigan and, while there, a physician diagnosed the case as syphilis and began treatment with potassium iodide and mercury inunctions. Improvement was prompt. This physician was killed in an accident and the parents, probably not realizing the seriousness of the case, did not have treatment continued. Sometime later, they returned to their old home near Dallas, Texas. The girl was again growing much worse and they went to a hospital in Dallas, where a diagnosis of pulmonary tuberculosis was made, confirmed (?) by x-ray. We have not seen this plate, but the written report would not warrant this diagnosis from the x-ray. The parents then gave the history of the specific treatment. The hospital staff then had a Wassermann made, which was positive. The diagnosis was then changed to tuberculosis and syphilis, and an unfavorable prognosis given. To try the effect of climate, the family came to Albuquerque. They had lived here about half a year, with the child's condition growing steadily worse, when I was first consulted. The parents were inquiring for the cause and relief of the "rheumatism" which was developing. I may add that, until I had told the parents that the case was probably syphilitic, I did not get any of the above history of positive findings.

PHYSICAL EXAMINATION: Girl, small for 12 years, poorly nourished, inclined to be peevish; coughs a great deal with much expectoration; tires easily and walks with a noticeable limp. Eyes, ears and nose negative. Teeth negative, except eruption is in poor alignment. Tonsils have been removed. The chest fails to show any signs distinctive of tuberculosis. Just below the left knee, on the inner surface of the tibia, is an enlargement, hard and not tender to pressure. About three inches above the ankle, on the outer side of the fibula, there was a more noticeable enlargement, hard and slightly tender on pressure. This last is the point causing the lameness.

DIAGNOSIS: Sarcoma was excluded because of the absolute lack of any history of trauma, and because there were two separate and distinct lesions, neither of which could be secondary to the other. Tuberculosis was excluded for the same reasons, and because, in addition, there was no pain and the processes were proliferative in character. As the history, when obtained, was so distinctly positive, no Wassenmann was made, but an x-ray was asked for. In going over the case with Dr. Van Atta, our conclusions were that this was more probably acquired than hereditary; that the tonsillar trouble had been gummatous at the time they were removed; that the typhoid could have been syphilitic; and, finally, that the proper treatment given at the one time had retarded the progress to an extent which allowed us to deal with a tertiary stage without the least sign of involvement of the nervous system.

The first radiogram (Fig. 1) was made and treatment started the first week in January, 1920. On seeing the plate, our wonder was that the bone had not broken. The girl was taken from school and only necessary walking allowed. Treatment began with .1 gm. potassium iodide, ti. i. d., and a weekly injection of mercury salicylate, .065 gm. in the gluteal muscles, for four weeks. An initial dose of .2 gm. neoarsphenamine was given one week later, and was followed by weekly injections of .3 gm.

for seven weeks. This course was interrupted midway by giving one dose of mercury cyanide, .0027 gm., and sodium cacodylate, .16 gm., stopping the potassium iodide three days on either side of this injection. Following the neoarsphenamine, four deep injections of mercury salicylate at weekly intervals were given. This course was also interrupted to give a single injection of mercury, double the former dose. Potassium iodide was discontinued during this course of mercury.

During the month of March, there was an attack of coryza or mild influenza and all medication except the potassium iodide was left off for two weeks. By April 1st, soon after the second radiogram (Fig. 2) was made, the improvement was so marked that the patient was allowed to re-enter school.

Following the second course of mercury, the weekly doses of neoarsphenamine were resumed, interrupting with mercury cyanide and sod. cacodylate after the third and sixth doses. Potassium iodide was also started with this, but a slight gastric disturbance caused this to be stopped. With the last part of the series of eight injections, the potassium iodide was resumed. This course was followed by a course of mercury inunctions, 4 gm. five times a week, for eight weeks. Potassium iodide was given over a part of this course and for a short time following.

About October 1st, the second half of the treatment was begun, being practically a duplication of the first half. The neoarsphenamine, however, was given in .45 gm. doses and instead of the mercury salicylate, the mercury cyanide and sod. cacodylate were used. This change was made because of the pain and continued soreness of the deep injections. Potassium iodide was given interruptedly during this period, always keeping three days away from the mercury cyanide. The potassium iodide was also given with the final course of mercury inunctions.

This treatment is the same, with the slight modifications as one given in the Jour. A. M. A., for Nov. 29, 1919. Summarizing the treatment: This patient had, within a period of 16 months, a

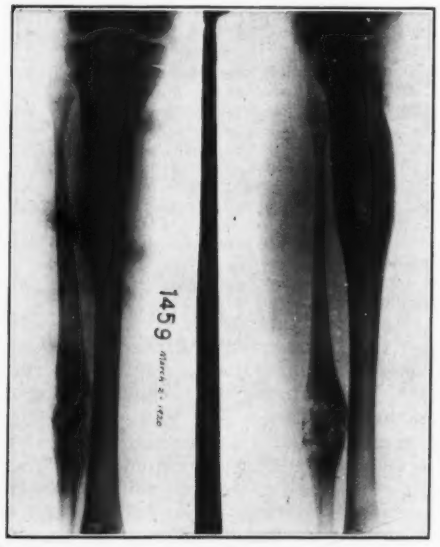

Fig. 2. Made March 2, 1920, after two months' treatment. Distinct evidences of repair in both lesions.

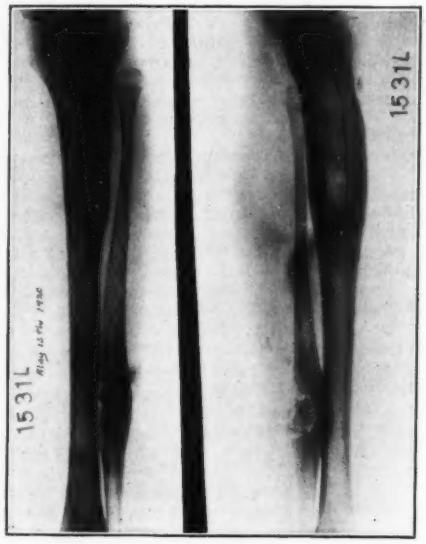

Fig. 3. Made May 15, 1920, four and a half months after starting treatment. Note the normal appearance of the new bone around both lesions.

Fig. 4. Made August 22, 1920, nearly eight months after treatment was begun. Tibia shows only a very small area and fibula has formed a strong bridge of normal bone.

Fig. 5. Made Nov. 17, 1920, ten and a half months after treatment started. Tibia shows no evidence of disease and fibular lesion is limited to a small area of periostitis.

daily dose of 3 gm. of potassium iodide fully three-fourths of the time. Intravenously, she was given 32 doses of neoarsphenamine, the initial dose of .2 gm., with 15 doses of .3 gm. and 16 doses of .45 gm., together with 10 doses of mercury cyanide and sod. cacodylate of practically the same arsenical content. Intramuscularly, she received eight injections of mercury salicylate, .065 gm., and 80 inunctions of 4 gm. mercury each.

When starting this treatment, I considered that I was giving intensive treatment. In the light of work of the past year and some previous to that, this cannot be so regarded. I have given instructions for continuing treatment, at intervals, during the next two years with mercury and iodide. We will have a Wassermann test made in about three months from the end of continuous treatment.

At present, the girl is apparently in perfect health. Her height now is 54 inches and her weight 65 lbs., a growth in one year of four inches and a gain of 20 lbs. in weight. There is no trace of lameness. The girl is as active as normal. There is no noticeable deformity at the site of either lesion and radiogram shows the condition of the bones at this time.

NOTE.—The last plate was made after this paper was presented and shows continued progress. A Wassermann, made July 23, 1921, shows a 4 plus positive. The patient has continued to gain and at this time, February 15, 1922, she is 57 inches in height and weighs 71 pounds. Treatment has continued during the time since the paper was presented with inunctions of mercury and potassium iodide internally.

DISCUSSION

DR. TULL: I would like to say that this case came up at our County Medical Society and we thought it very interesting; indeed, sufficiently interesting for us to request the Doctor to present it to the State Society, and we would like to hear some discussion of it.

DR. BENNETT: This was an interesting paper to the general practitioner. We have a number of cases that come to us that are syphilis and a great many of us do not like to go to work to try to do what we ought to do with them. We pass them up. We don't go after those cases as we should go after them. The general practitioner doesn't care to touch it; doesn't care to fool with it, and we, in our general practice, see those cases. We see those cases in the Indians. I know it is there, and while it is impossible for a man working with the Indians as a rule to do anything with them, we know that that work is right there. This ought to be an interesting paper for the general practitioner. It shows that a man can do something with a case that looks impossible, and a great many times we find syphilis where we are not looking for it, and it is worth while to make a careful diagnosis and then take up a good treatment.

DR. KINSINGER: The paper is a very interesting one and the demonstration very excellent, and we old men who have practiced medicine for many years and see the failures that we made of diseases that, at that time, were certaintly difficult of diagnosis and remained so, but during this recent war our eyes were opened. Among the apparently healthy soldiers in the army were obscure troubles, pain and nodular formations on some portions of the bony part of the body. By the use of the x-ray and the Wassermann the diagnoses were clear and cure effective.

I think, as the Doctor has just stated, that we should be more careful in these cases which are obscure and difficult of diagnosis,—patients who do not respond to treatment,—to suspect at least sufficiently to attempt to make the diagnosis by those two methods and apply the treatment heroically until you have made a cure as the doctor has done with this. I think it is splendid work, and I think the doctor is entitled to great credit for bringing this before the society to open our eyes as to what may be accomplished by careful procedure in those cases.

DR. DODDS: I have nothing further to add to what is in the paper but I thank you, gentlemen, for your attention.

DELAYED UNION AND NON-UNION OF FRACTURES: *Nutter*, Jour. of Bone and Joint Surg., January, 1922, p. 104.

This classical article, with extensive bibliography, discusses many of the problems which beset the surgeon in fractures. Distinction is made, in the outset, between delayed union and non-union. By delayed union is meant a retardation of the process of normal bony consolidation of a fracture. Non-union is only to be diagnosed after exhausting every means to promote union, short of operation, faithfully and for many months. Non-union should only be applied to those conditions in which the bones cannot be expected ever to unite without surgical interference. Non-union should not be diagnosed until from six to twelve months have elapsed since the fracture.

Causes of delayed union may be general, like syphilis and other constitutional conditions, such as malaria, starvation, hemorrhage, pregnancy and lactation, acute febrile diseases, etc. The locally acting causes are, chiefly, (1) Non-apposition; (2) Faulty immobilization; (3) Sepsis; (4) Local disease at the fracture, such as tumors, cystic disease, scurvy, osteomalacia, gumma, tuberculosis, etc.; (5) Defective blood supply; (6) Foreign bodies at site of fracture. Non-union is practically always either due to the interposition of soft parts between the fragments or to loss of large fragments of bone.

Treatment of delayed union; do not interfere too soon. In a fracture of the femur, for example, if union has not occurred at the end of ten weeks, be sure of three things,—good alignment and length, good immobilization and a good blood supply. If these essentials are present, let it alone for three or three and a half months. If union is still lacking then, passive congestion by damming above and below the fracture is excellent treatment (this treatment was originated by H. O. Thomas, being later developed by Bier and usually called "Bier's hyperemia"). Baking and massage are indicated adjuvants to the hyperemia. The injection of irritants, of tissue fluids, of blood from the patient, or fibrin from horse serum between the fractured bones are not encouraged. Andrews method of drilling down upon the bone ends, or the open operation of Wildey, are commended, although the latter should be reserved as a treatment for non-union. Both are designed to release osteoblasts from the medullary canal.

The treatment of non-union is discussed at length, preference being given to the use of bone grafts, after freeing the ends of the bones from any interposed soft tissues, and removing any tissue which has sealed over the ends of the bones.

Fracture of the femoral neck, the author says, is the exception rather than the rule, not more than from 15 to 30% of these fractures acquiring bony union. He recommends the bone peg in these cases also, in preference to metal spikes.

Where delayed union or non-union is due to sepsis, time is the chief factor. There is a time, given by Gallie at from three to five months after the fracture, when osteogenesis is at its height, vascularity is greatly increased, callus is abundant and the septic infection usually has run its course. This is the most favorable period to seek union, by clearing away all the septic tract and other barriers to union, and seeking apposition, with immobilization.

Bone-grafting, following sepsis, offers difficult problems. Here, the radiograph will probably give the most reliable information as to the presence or absence of active bone disease.

Southwestern Medicine

Published monthly by the Board of Managers of the four constituent societies.

VOL. VI. APRIL, 1922. No. 4

Information of interest to all readers, together with directory of officers of the constituent societies and the Board of Managers of this magazine, will be found following the Table of Contents on pages 1 and 2 of the Advertising Section.

Editorial Staff

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NEW MEXICO MEDICAL SOCIETY MEETING

The Fortieth Annual Meeting of the New Mexico Medical Society will be held at Gallup, on April 28 and 29th. A partial list of the papers is given below, from which it will be seen that this bids fair to be one of the highest class meetings ever held in the Southwest.

The New Mexico Society has learned, as have other societies, that their best meetings result when medium-sized cities are selected as meeting places, because, then, the majority of the doctors in attendance have nothing to distract their attention from the business in hand. Gallup is in the northwestern part of the state, on the main line of the Santa Fe; it is an important industrial center, being a railroad distributing point and coal mining section.

The McKinley County Medical Society, which has charge of the arrangements, will have everything in readiness for the meeting, although at the time of our going to press, their full program was not available. Among the outside guests who will present papers are the following:

Dr. Peter P. Vinson, of the Mayo Clinic, will have a paper on "Diagnosis and Treatment of Cardiospasm."

Dr. Nelson W. Janney, of Los Angeles, will speak on "The Dietetic Management and Complications of Diabetes."

Dr. Titian Coffey, of Los Angeles, will give a lantern slide demonstration of "Repair of the Curvix Nine Days After Delivery."

Dr. George Piness, of Los Angeles, will have a paper on "Present Aspects and Etiology and Treatment of Bronchial Asthma."

Dr. Willis W. Waite, of El Paso, will have a paper on "Waste Products and Their Elimination."

Dr. E. C. Prentiss, of El Paso, will write on "Incidence and Growth of Cancer."

Dr. Crum Epler, of Pueblo, Colorado, will have a paper on "The Operation of Election in Cholecystitis."

Dr. W. Warner Watkins, of Phoenix, will have a paper on "Chronic and Subacute Appendix Disease," with lantern slides.

Among the papers so far secured from within the state, are the following:

Dr. J. D. Mulder of the Reheboth Mission will give a paper on "Trachoma."

Dr. G. H. Luckett, State Director of Public Health, will write on "The Modern Treatment of Syphilis."

Dr. R. E. McBride will write on "Some Needed Changes in Our Medical Law."

Dr. G. S. Luckett will write on "The Relation of the Practicing Physician to the Health Department."

The headquarters of the meeting will be the "El Navajo," one of the famous

Harvey houses of the Santa Fe line. Reservations should be made in advance by writing the Reception Committee, since the accommodations are always limited at the Harvey hotels.

Local committees are as follows:

Reception: Drs. H. G. Willson, A. H. DeLong and H. T. Watson, Gallup, N. M.

Arrangements: Drs. A. E. Dodson, J. W. Stofer and W. B. Cantrell.

Program: Drs. J. W. Elder, J. W. Hannett and J. W. Stofer.

The President-elect of the New Mexico Medical Society is Dr. H. A. Miller of Clovis. The retiring President is Dr. C. Russell, of Artesia. The Program Committee is composed of the President of the Entertaining Society (Dr. J. W. Hannett, of Gallup), the Secretary of the same society (Dr. J. W. Stofer, of Gallup), and the Secretary of the State Society (Dr. J. W. Elder, of Albuquerque), who is serving out the unexpired term of Dr. Tull (Secretary), who has moved to Los Angeles.

The Social Program includes the following features:

Entertainment of the visiting ladies by the Women's Club and Eastern Star.

Smoker and Boxing Contest, Friday evening, April 28.

Banquet and Dance, Saturday evening, April 29.

Trip to Inscription Rock and the Zuni Indian village on Sunday, April 30.

Dr. Stofer advises that for any visitors who will remain over Sunday, a trip to Inscription Rock,—40 miles distant,—will be arranged. This is one of the many interesting historical points in New Mexico, there being here the remains of one of the oldest of the Spanish settlements in the New World. It is perhaps hardly necessary to recall to mind that northern New Mexico contends with St. Augustine, Florida, the right to claim the first settlement of whites on the American continent.

MEDICINE OR MEDICAL SCIENCE?

What is in a name? Much, in this day of advertising. If the world is inclined to accept the valuation which a man places on himself, the same is true, in a measure, of an organization or profession. The valuation which we have placed on our profession is reflected in our nomenclature, and if the public classes physicians and surgeons as *artizans* instead of *scientists*, we cannot blame them when we have invited them to do so.

Just to the extent that we have forgotten that *our practice* is rooted in natural science and have held aloof from the great body of general science, just to that extent has the public forgotten that we are scientists at all. When we recall that only within the last generation have we acknowledged, in our schools, that physics and chemistry are necessary foundations for medical training, we may judge how dangerously far we have strayed, and the reaction in the public mind has been *pari passu* with our own self-righteous isolation.

There has been, in the past few years, a slow but sure tendency to return to a correct conception of our normal relations in the scheme of things scientific. Two significant evidences of this are cited in a recent address of Dr. Erlanger, (Science, Feb. 10, 1922), where two large and influential organizations have made changes in nomenclature. The American Association for the Advancement of Science changed the name of its Section on Physiology and Experimental Medicine to "Section on Medical Sciences." The National Research Council, in perfecting its permanent organization, changed the name of its Medical Division to "Division of the Medical Sciences."

As a further illustration of the rapidly growing tendency to recognize the inseparable and close relation between clinical medicine and general abstract science, he has investigated the number of scientists without an "M. D." degree, who are devoting themselves to the "practice" of medicine, either as teach-

ers or as clinical or research laboratory directors. He finds the number to be about 1200 in the United States. This has no reference to "technicians," but refers to men whose standing, in the medical world is in every respect on a par with the highest type of physician or surgeon. We are entirely too prone to take the attitude that the possession of an M. D. degree endows a man with some special distinction in handling disease problems. Such a degree, even supplemented by years of practical experience, does not entitle a doctor to be called a scientist, unless he has been grounded in the fundamental sciences from which medicine has developed,—physics, chemistry, biology, etc. A striking testimonial to the value of these fundamentals in clinical practice was recently given by Joslin, when he recited the marked advance made in recent years in treating diabetes; he declared that this advance was due solely to the voluntary contributions on metabolism forced upon the medical profession by physiologists and research workers, who are not medical men. Dr. Erlanger concludes his address by saying, "the value of science in medicine is coming to be appreciated by scientific men and presages a recognition of its worth by the enlightened public at, let us hope, not too remote a date. When that has come about, and not until then, will medical science in the United States come into its own."

This "recognition by an enlightened public" is a consummation devoutly to be desired and there are evidences that it is gradually coming about. The difference in the foothold which quacks and religio-psychologic cults have secured in this country, compared with their lack of progress in foreign countries is due to our lax medical teaching and faulty attitude in the past toward general science. Had the position been taken fifty years ago, either by the Government, or by the medical profession itself, that the physician must be a *scientist first*, and a practitioner, or *practical applicant of that science*, afterwards, the public mind would have reacted to that idea, and quasi-medical theories would never have been born. But when medical colleges were allowed to spring up like mushrooms and the country was flooded with inadequately trained "M. D." holders, the educational effect of this condition was inevitable.

We are now attempting to undo this damage, and there is evidence that some headway is being made. One notable example aimed directly at a pseudo-medical cult, is represented by the articles in Leslie's on "Chiro-quack-tic." Another one which will have its effect upon just as false a teaching, is the series of articles in the Pictorial Review on "Medical Psychology." Here the explanation of any of the authentic "cures" of the Christian Scientists are explained by the natural and well-known phenomena of psychologic reactions. The powerful effects of auto-suggestion and other subconscious mental processes on physiological charges must not be minimized by medical men. Let us affirm and reaffirm that medical practice is firmly grounded in fundamental science, and cannot be attacked without first destroying the sciences from which it has grown. If one wishes to deny the verity of chemistry, physics, mathematics, and other natural sciences, such an unfortunate can be disregarded by us, in our reconstruction work of enlightening the public to the true place of Medical Science in the world's work and future development.

LOYALTY

One of the rarest of human traits, and yet one which every man will protest to high Heaven that he possesses. This publication has received numerous solemn protestations of loyalty, and although we realize the frailty of human vows, we must build our hopes upon such assurances.

The one direction in which loyalty will be the most valuable to us, and the one in which it is conspicuously absent, is the support of the journal in our advertising pages. If a scant dozen doctors, of the hundreds who receive this publication, should make it a practice to search the advertising pages whenever they need supplies, and pat-

ronize the advertisers herein contained, letting the advertisers know that their ads are in this way, effective, this would be the most valuable contribution this journal has ever yet received.

Further, if another dozen doctors, or the same dozen, should take the pains to answer the "direct-by-mail" solicitations daily received by them, and tell such advertisers that they patronize the firms which advertise in our official journal, this alone would insure our financial success.

We repeat that loyalty to this journal, in spite of protestations to the contrary, is hardly to be found among our readers. Actions speak louder than talk. ACT NOW!

DIPHTHERIA CONTROL

The campaign against diphtheria, in New York City, which has been aggressively waged by Dr. Abraham Zingher, for the past eight years, is to be carried into other cities of that state. The cities of Auburn, Schenectady and Syracuse have been selected as the next points of attack, and the State Department of Health will have the co-operation of local health and school officials, Red Cross and other civic organizations. According to the figures analyzed by Dr. E. S. Godfrey, Director of the Division of Communicable Diseases (formerly Superintendent of Public Health in Arizona), in every city of that state, with the notable exception of New York City, there was a sharp rise in the incidence of diphtheria, beginning in 1919. New York City now has the lowest diphtheria rate it has ever experienced, and is the only city in the state whose rate is below that of the state at large. The conclusion cannot be escaped that this appreciable difference is due to the campaign carried on by the Board of Health of that city, in which more than 100,000 children have been immunized.

In view of these facts, the statements of Cumming (J. A. M. A., March 4, 1922), that the control of diphtheria will not come through immunization, but through a continuance of the forty-year-old effort to control the sources of infection, is astonishing. With a simple and effective method like the TAT immunization, certainly we should look for our parallel in the methods so successfully applied to smallpox, rather in those ineffectually applied in the past to other communicable diseases, including diphtheria.

"DIRECT BY MAIL" LITERATURE

The gullibility of the medical profession is being tested on a gigantic scale, at the present time. Every firm which has a product to sell to the medical profession is betting on this well known trait of ours, through their "direct-by-mail" soliciting. In this type of advertising, deserving firms compete with fraudulent ones, and wise is the physician who can discriminate. There is one certain method, however, when applicable. If the firm's product is advertised in your official medical journal it is trustworthy; if it is not, it may still be trustworthy, but cannot be taken on its claims. There is always a chance that its dubious character may have barred it from these advertising columns.

In a recent tour made by a representative of the American Medical Association, he was frankly told that physicians would respond more readily to "direct-by-mail" soliciting than they would to advertisements in their own official journals. The tragedy of this is that it is usually true. A medical organization will establish its official journal, one of the chief functions of which is to censor the products advertised to the medical profession and present, in its own advertising pages, the acceptable and trustworthy products. Then, the organization will turn its back upon its own creation and respond to the flood of "junk" which every mail brings to their desks. And yet somebody once called it *Homo Sapiens!*

PERSONALS AND NEWS ITEMS

Dr. George A. Bridge, of Bisbee, chief surgeon of the Copper Queen Hospital, recently suffered a very distressing accident. While playing with his young son, he fell from a bicycle and fractured one of his femurs at its neck. We are informed that there was no displacement and an uneventful recovery is expected in due course.

At the recent election in Phoenix, Dr. W. C. Ellis, one of the active practitioners of that place, was elected to the City Commission, and will take office May 1st. The other two candidates on the same ticket were also elected, all being pledged to make a change in the city manager, which will probably mean a complete change in the city health department.

Dr. W. C. Hackett, a colored physician of Phoenix, who has been actively engaged in practice there for several years, recently purchased the old Kibbey property on East Jefferson Street, and has remodelled it into a hospital, catering particularly to his own race. Dr. Hackett has won the respect and confidence of the medical profession of the community and his venture will, no doubt, be a success. The location and the building are both well adapted for such an institution; it has been entirely refinished, and equipped with a surgery and will accommodate about twenty patients.

The Arkansas Medical Society announces their annual session at Little Rock, on May 17th, 18th and 19th. This is to be a "homecoming" meeting and the attendance of Arkansas doctors, now practicing in other states, is especially desired.

RECIPROCITY WITH THE STATE OF SONORA

The secretary of the Santa Cruz Medical Society,—Dr. A. Wallace,—advises that the negotiations with the State of Sonora, Mexico, for the acceptance of Arizona's certificates to practice medicine and surgery, have been successfully concluded. Applications should be made to the secretary of the State of Sonora, and should be accompanied by fifty pesos. This very desirable reciprocity has long been sought by the Santa Cruz Society, and probably foreshadows similar action by other states in Mexico. It applies only to the practice of medicine, and does not include osteopathy or chiropractic.

ARIZONA HOSPITAL AND SANATORIUM

In the reorganization of the old Arizona Hospital, the Tucson-Arizona Sanatorium building has been renovated and equipped for complete modern medical and surgical service, as well as for sanatorium patients. The former Arizona Hospital building at 123 S. Stone avenue, has been made into a Physicians' Building, occupied exclusively by physicians and dentists.

ST. JOSEPH'S HOSPITAL STAFF MEETING

(Phoenix)

The meeting of St. Joseph's Hospital Staff, held on March 9th, saw the inauguration of their clinical discussions, one of the main requirements of a standard hospital. The clinical records of four cases were on the program, only two of which were presented. Dr. Yandell presented the history and description of treatment of a case of injury to the face, which fractured the antrum, displaced an unerupted tooth, and was followed by infection of the antrum, suppuration and persistent discharge from an infraorbital sinus. It elicited a spirited discussion, ranging over the failure of the x-ray department to show the fracture, the failure of the surgeon to find the supposed loose tooth, the ineffectiveness of the treatment of the infection, the apparent prompt effect of electrified air upon the infection, and the proper methods of handling the present condition.

Dr. Schwartz presented a description of an interesting case of gunshot injury to the head and eye, in which two buckshots were shown by x-ray to be deeply imbedded in the brain substance of the frontal lobe, without any objective symptoms referable to the nervous system. This brought forth a long list of wierd injuries usually thought to be impossible without killing the patient, in all of which the victims had recovered without visible untoward effects.

Future meetings of this type will be looked forward to with great interest by all those who were present, and it is expected their inauguration will arouse renewed interest in the staff meetings.

TEXAS STATE MEDICAL ASSOCIATION

Physicians and surgeons of the Southwest and their wives and daughters who visit El Paso May 8 to 11, to attend the coming annual convention of the Texas State Medical Association, will receive a cordial welcome from this city of unique location, historic interest and modern appointments, which has set a remarkable pace in growth during the past forty years, being today the metropolis of a region stretching through three American states and the northern half of the Mexican republic. El Paso's medical fraternity, centered in the El Paso County Medical Society and backed by the Convention Bureau of the El Paso Chamber of Commerce, are looking forward enthusiastically for the arrival of every member of the profession in Texas, New Mexico, Arizona and a large attendance from Mexico. Opening on May 8 and having interesting sessions daily till the 11th, the convention will be the largest El Paso meeting of the year. Set for a season very pleasant for travel and seeing the sights, it is expected that there will be nothing lacking in comforts and pleasures for every delegate.

Southwestern doctors will have here a rare opportunity to see the sights of the "Gateway City," nestling in the sunny pass under the brow of Mount Franklin, at the point where the Castilian conquerors under Captain Oñate first trod on what is now American soil three and a quarter centuries ago, through which natural entrance the human tides of generations have ebbed and flowed, as the aboriginal tribesmen were pushed back and the outposts of civilization thrown forward. It will be a marvel to the visitor to behold an up-to-date American city which has risen since Americans took hold after the Mexican war and brought to a high standard since the seven railroads crossed here in their great work of serving the border country. Facilities are not lacking for entertaining extraordinary crowds. Electric cars, automobiles, and even the antique Mexican "coches," offer quick transportation around city and suburbs, Fort Bliss and Ciudad Juárez.

El Paso's hotels, apartments and restaurants offer the facilities of the best American cities. Amusements in great variety are easily reached. Fifteen parks and glorietas provide shady, restful spots. Club houses and secret society buildings are numerous and commodious. El Paso Country Club, for instance, offers an all-year golf course.

Convention headquarters will be at the Paso del Norte Hotel, with the big auditorium in Liberty Hall, in El Paso's million dollar county building, ready to take care of 4,000 persons. Handsome apartments will be set aside in the court rooms of the edifice for departmental and clinical meetings and the exhibits.

Allied with El Paso's medical men in the convention arrangements are the representatives of the United States Public Health Service, United States Army Medical Corps, Federal Board for Vocational Training and the Veterans' Bureau. A complete general committee formed by the local medical society, the pioneer doctors' association in the Southwest, has anticipated the needs of the coming convention and has made elaborate plans for reception and entertainment. Dinner meetings, special affairs for the ladies and other diversions are being scheduled. The historical missions and chapels erected by the indefatigable Franciscans 300 years ago will be pointed out. Motor tours over the Scenic Drive around Mount Franklin, up and down the great irrigated valley of the Rio Grande, to Fort Bliss, largest military post on the border, and inspections of the sanatoria and hospitals of the city will be on the program.

From a climatic standpoint El Paso has points to present to medical men that are worth considering. Three hundred and thirty days a year are sunny days here, with a medium mountain altitude of 3762 feet above sea level. Absence of humidity, light rainfall, open winters and a "sensible temperature" of 22 to 28 less than the thermometric reading in summer are bringing favorable attention to this health center from doctors and patients all over America.

Among El Paso's sanatoria and hospitals, deserving of a visit, are the great William Beaumont General Hospital of the United States Army at Fort Bliss; the Southern Baptist Sanatorium for treatment of tuberculosis; the Hendricks-Laws, Homan, Long, Sunnycrest, El Paso, Wiley, Finn, Mountair, Ashworth and others, all doing their good part to restore the broken health of those who come to the sunny Southwest from less favored regions.

Convention visitors will find that a large percentage of El Paso's citizens came here seeking health, for themselves or families, got well, remained well and have prospered with the upbuilding of the city. Facts and figures demonstrating that El Paso is the climatic metropolis of a region greater than all the United States east of the Mississippi river will be given to every member of the Southwestern society this month. A study of the records of the United States Weather Bureau shows that El Paso has no superior in this country in the climatic essentials for the restoration of lost health.

In hospitals, El Paso has the Hotel Dieu, conducted by the Sisters of Charity of St. Vincent de Paul; the El Paso County Hospital, managed by an efficient board; Providence Hospital, with a staff of established men; the Masonic Hospital, just reorganized to operate the property formerly known as the Rolston Hospital, and the Public Clinic, in the county building. All these have the co-operation of the medical fraternity.

Convention visitors will witness El Paso's great industries, its educational, religious and social institutions. Texas College of Mines and Metallurgy, a modern High School and Junior College, eighteen grammar schools, fifteen academies, colleges and private schools, fifty churches, nearly 100 clubs and lodges and societies are prime factors in advanced community life.

El Paso opens its gates wide for the physicians and surgeons of its own Great Southwest and bids them come and join in what will be the biggest and most enjoyable gathering of the fraterity ever scheduled for the Pass City, the logical meeting place for people of the East and West, on the silvery Rio Grande, surrounded by two republics and enlivened by the traditional hospitality of an optimistic people.

Fig. 1. El Paso del Norte Hotel. Headquarters of the Texas State Medical Association Meeting, May 9-10-11.

Fig. 2. Hotel Sheldon on right; Mills Building on left. City Plaza in center.

Fig. 3. "Liberty Hall"—El Paso County Court House, where all sections of the Association will meet. Liberty Hall in this building will seat 4,000. Other rooms will house the exhibits and sections.

Fig. 4. Looking down upon El Paso from Scenic Drive.

Fig. 7. View of El Paso from the High School Building eminence.

Fig. 5. Looking toward Liberty Hall from the headquarters hotel.

Fig. 8. Old Mission Church in Juarez, Mexico; 300 years old.

Fig. 6. View from Union Depot. Tall building in distance is the Paso del Norte Hotel,—the headquarters.

EL PASO COUNTY MEDICAL SOCIETY

The El Paso County Medical Society met in regular session on March 6, 1922, with 33 members and visitors present.

Dr. Paul Gallagher reported a case of an infant delivered three weeks previous, who had two well defined scrota which resembled enlarged labia; in each of them a gland could be felt, which were taken to be testicles because it was thought an epididymis could be differentiated on each. Between the scrota was a rudimentary vagina covered with an imperforate membrane, and there was also a well defined penis. The anus was imperforate. An incision was made at the usual anal site and the rectal end of the gut was found three-quarters of an inch from the skin. This was brought down and sutured to the skin with silk worm sutures. Two weeks and three days had elapsed since the operation and the bowels have been moving regularly. Dr. Gallagher interprets the sex as male.

Dr. J. W. Cathcart reported a case of a woman who, three years before, had submitted to breast amputation because of carcinoma. There has been a recurrence in the opposite breast and a very large number of tumors have appeared under the skin over all parts of the body. Dr. Cathcart reports this case because it is the only one ever seen by him in which metastases have occurred in the skin in such large numbers after carcinoma of the breast.

Dr. R. L. Ramey demonstrated a specimen of a fibroid of the uterus complicated by pus tubes and a large polypus. The patient, a negress age 42, first noticed the tumor about two years previous. During this time the menstrual flow has been very profuse and one or two periods were missed early in the year. At the time of examination the cervix was found to be large, soft and patulous. Ballottement could be obtained and pregnancy was suspected. However, this was found to be caused by the polypus and because fibroid tumors could be felt on the body of the enlarged uterus, together with the history, operation was advised. Partial hysterectomy was done and the whole mass removed without rupture of the enlarged pus-filled tubes.

Dr. E. C. Prentiss read a paper, "Bacterial Growth in the Intestinal Tract. Biological Notes."

Capt. R. S. Loving of the William Beaumont Hospital, Ft. Bliss, demonstrated and explained a pressure pneumothorax apparatus made by him during an emergency while stationed at Ft. Bayard, New Mexico, in 1919. The appartus contains two manometers, one of mercury to measure the air pressure and the other of water to measure the pressure in the chest cavity. It also contains filters and a solution container to filter and sterilize the air. The apparatus was a simple, practical affair and was said by other medical officers present to eliminate some of the objectionable features present in pneumothorax apparatus now on the market, and Capt. Loving was the recipient of considerable commendation. He estimated the cost of manufacture of a similar apparatus at $5.00. A model has been turned over to the Surgeon General for comment.

The membership of Dr. H. F. Gammons was transferred from the Dallas County Medical Society.

THE ST. LOUIS MEETING OF THE AMERICAN MEDICAL ASSOCIATION

The arrangements of the St. Louis profession for the meeting places for the Session of the A. M. A., which is to be held in their city May 22-26 next, are singularly fortunate and convenient.

The Registration office, Post Office and Commercial Exhibit is to be in the Moolah Temple (Shrine), a beautiful and commodious building on Lindell Boulevard, two blocks west of Grand Avenue. At the other extremity of the group is the Odean, the home of the St. Louis Symphony Orchestra, with a main hall which seats better than 2,000, and several lesser halls. The main hall will be used for the opening session. Its acaustics are particularly good and suited to our purpose. The Sections on Practice of Medicine and of Diseases of Children meet here. In the assembly hall of the same building the Sections on Pharmacology and Therapeutics, and on Pathology and Physiology will meet. (It will be noted that there has been an aim to foregather closely allied sections.) The Sheldon Memorial, a very beautiful new hall on Washington Avenue one-half block west of Grand Avenue, which most admirably meets all requirements, will be the meeting place of the Sections on Ophthalmology, and Laryngology, Otology and Rhinology. The Section on Surgery, General and Abdominal, and on Obstetrics, Gynecology and Abdominal Surgery, will be held in the Third Baptist Church on Grand Avenue, a situation well suited to the demands. The Sections on Orthopedics and Nervous and Mental diseases will meet in the Law School of the St. Louis University, on Lindell Ave., a few steps west of Grand. The hall easily seats 500 and is both comfortable and convenient. Dermatology and Syphilis and Urology will use the large Union Methodist Church, on Delmar Avenue just west of Grand, which meets every requirement. The Sections on Gastro-Enterology, Proctology and on Preventive Medicine will use the large hall in the Musicians Club on Pine Street, east of Grand Ave., and next to the building of the St. Louis Medical Society, where the House of Delegates will hold its sessions. The Section on Stomatology is assigned to the assembly hall of St. Peters Parish House, one block west of Grand on Lindell. Immediately in this district will be found three of St. Louis's most important clubs, the St. Louis, University, and the Columbian. Restraurant catering to every grade of patronage are numerous in the district and precautions have been taken to insure that normal rates continue during the meeting.

The St. Louis profession is preparing for an unusual attendance; hotel reservations are coming in rapidly but it is purposed that even the late comer shall be comfortably housed. The wise traveler, however, makes his reservation as early as he finds it possible. Dr. M. B. Clopton, 3525 Pine St., St. Louis, is Chairman of the Committee on Sections and Section Work.

ABSTRACTS FROM THE CURRENT LITERATURE

POISONOUS ANIMALS OF THE DESERT: *Chas. T. Vorhies, Ph. D.*, Zoologist, Tucson, Arizona.

This pamphlet, distributed by the Agricultural Experiment Station of the University of Arizona, is very interesting and instructive. Nineteen species of rattlesnakes are known, fourteen occur in the United States, and of these fourteen, eleven are found in Arizona. Only one variety of the pygmy rattlesnakes is known to occur in Arizona (Edward's Massasauga), found in southeastern Arizona. Of the larger species, the following occur: Western Diamond Rattlesnake, the most common form in desert valleys; Black Tailed Rattlesnake, common in extreme southern Arizona; White Rattlesnake, in southwestern portion; Price's Rattlesnake, rare in the mountains of southern Arizona; Green Rattlesnake, small snake along the southern border; Tiger Rattlesnake, southwestern Arizona; Horned Rattlesnake, or side-winder; Pacific Rattlesnake, also called Black Rattlesnake, very rare in Arizona; Prairie Rattlesnake, one specimen reported in Arizona.

All rattlesnakes are dangerous and deadly, but there is no need to be panic stricken at sight of one; they cannot strike accurately more than half their length, and absolutely cannot leap at its victim.

The writer emphasizes the fact, now recognized by all informed medical men, that whiskey is *not a remedy for snake venom*, and the best way to finish the job started by the rattler is to administer plenty of alcoholic depressant. The ordinary recognized procedures of a tourniquet, incision of the bites, and potassium permanganate are given as the treatment.

Aside from the rattler only two other poisonous snakes are found in Arizona; these are the Annulated Snake found in the southern part of the state, which is not very dangerous, and the Sonoran Coral Snake, which is dangerous if provoked, and *chews* to imbed the fangs.

All the other snakes are useful animals and should be protected and encouraged to multiply on account of their tendency to destroy rodents. Many European countries have protective legislation for snakes.

Only one other poisonous reptile is found in Arizona,—and that is the Gila Monster; this and a closely allied species found only in Mexico, are the only poisonous lizards in the world. The Gila Monster has poison glands, but no poison fangs, the secretion oozing out between the lips and teeth. It bites only when irritated and then holds on like a bulldog, usually more harm being done in the attempts to dislodge the lizard than his bite will produce. The venom is not to be regarded as deadly to man. If bitten, the part should be released as carefully and rapidly as possible, bleeding induced and the wound washed with an antiseptic. Swelling and hemorrhagic discoloration will result. The Banded Gecko, a delicate, retiring and absolutely harmless lizard, is often mistaken for a "young Gila Monster," but is entirely different.

Some space is devoted to a discussion of the skunks, on account of their relation to hydrophobia.

Among the *Anthropoda*, several species are described and several common superstitions refuted, concerning these "animals."

He first calls attention to the observation that very few of even the most dreaded insects of the desert country can inflict a more dangerous or painful wound than the common honey bee, or the wasp. Many of the ants of the Southwest have stings, but they all attack by biting and then spray the wound thus made with poison from the sting. Among the most formidable of the stinging ants are the "harvester ants," whose sting is severe and produces a fiery, numbing pain which may last for hours.

The insect known to entomologists as "cone noses" are poisonous, also known as the "Arizona bedbug," bellows bug" and "Arizona tiger." They have a cone-shaped beak with which they stab quickly and viciously.

Two innocent and non-poisonous insects found in the Southwest, which are feared without cause, are the "sand cricket" or "Child-of-the-Desert," and the one known by the Mexicans as the "campamocha" or Praying Mantis." This latter, especially, is a useful insect and perfectly harmless.

The flannel moth or "woolly caterpillar" have, hidden among their long and soft, harmless hairs, many stiff bristles or spine-like hairs, which will penetrate the skin and break off, producing a rash like that caused by nettle.

SPIDERS: Tarantulas are among the most dreaded of all spiders by the average person. They have poison jaws for killing their prey. They are not nearly so likely to bite a human being as is generally supposed, but their bite is likely to be severe, if not serious, but should not be considered dangerous to the life of the average, healthy adult.

A small black spider, commonly known as the 'Black widow" or "shoe button spider" is more poisonous than the tarantula, but not nearly so common in Arizona.

The Mata Venado or "vinegarone," is represented by five species in Arizona. These insects do not have poison glands, and although they have a fearful reputation, especially among Mexicans, this is not borne out by verified facts.

SCORPIONS: These insects do not bite, but sting by throwing the so-called tail up and forward and striking with it. There is a well-developed poison gland in the bulbous base of

the sting. The writer emphasizes that the results from the sting of any Arizona scorpion are no more likely to be fatal than are the stings of the honey bee. The Whip Scorpion or "grampus," is even more feared than the ordinary scorpion, yet it has no sting and is non-poisonous.

CENTIPEDES: The front pair of legs is laid forward beneath the head, where they act as a pair of jaws moving laterally, and within their bases lie the poison glands. The posterior pair are held elevated and are often mistaken for antennae. These insects inflict bites which are very painful and relatively serious, but there is little ground for the unreasoning fear of centipedes, as compared with the relative calmness about bees. The frequent statement about the poisonous character of *all* the feet is groundless. They have no poison glands, but they have sharp-pointed claws and may cling sufficiently to produce puncture wounds.

ARTIFICIAL PNEUMOTHORAX IN LUNG ABSCESS, HEMATOTHORAX, BRONCHIECTASIS, AND IN ADVANCED PULMONARY TUBERCULOSIS: *Clendenin*, Southwest Jour. M. & S., February, 1921.

After trying out all the complicated methods, he now uses plain air, simply washing it through sterile water. His indications in tuberculosis are advanced cases, confined to one side, without pleural adhesions, introducing from 500 to 1000 c. c. at the first injection, and after securing collapse, maintaining this for at least a year. Among other hemorrhage conditions, he advises its use in gunshot wounds of the lung. In acute lung abscess, bronchiectasis and pleural effusion, pneumothrax is recommended.

NEUROSYPHILIS: The Public Health Service has recently sent out an inquiry to a few of the leading syphilographers of this country asking for an expression of opinion on the frequency and treatment of neurosyphilis. The general opinion of the men written to was expressed as follows:

"While a certain amount of the apparent increase of neurosyphilis is due to the increasing use of spinal fluid examinations and other modern diagnostic methods, I think there is no question that the ineffective use of arsenicals plays a very important part in this most undesirable tendency,—the physician or health officer who is unable or unwilling to follow a syphilitic patient through a period of years, if not for life should not attempt to treat the disease. Relapse is certainly the great outstanding fact of syphilis and the so-called modern treatment has certainly not entirely done away with it. In particular, relapse in the nervous system and infectious involvement of the mucous membranes and genitalia are so alarmingly frequent under the inadequate use of arsphenamine that every agency which employs this drug in the treatment of syphilis should be thoroughly on the alert and equipped to detect the earliest manifestations of relapse."—*Stokes.*

"It appears to us that among the factors mentioned as probable causes, two are of paramount importance, viz.: (1) the tendency to undertreat; (2) the failure to interpret pathologic findings in the light of the clinical picture. (Fraser and Duncan, British Journal of Dermatology and Syphilis, July, August and September, 1921). To these we would add another of almost equal importance,—the tendency to interrupt treatment by periods of rest. To our minds the treatment of all syphilis ought logically to be continuous rather than intermittent. Early neurosysyphilis in the form of neurorecurrences would be reduced to nil if this were done. Late clinical neurosyphilis might be equally easily avoided by the early routine use of spinal puncture and by adjustment of treatment to the pathological findings. We agree that the 'sterilization' treatment of syphilis, as exemplified by Pollitzer's method, is distinctly dangerous from the point of view of neurosyphilis, and that treatment should be directed toward building up the patient's own resistance to the disease. Stokes' discussion of this problem in his paper, 'The Application and Limitation of the Arsphenamine in Therapeutics' (Archives of Dematology and Syphilology, September, 1920.—See Venereal Disease Division Abstracts, March, 1921) deserves wider circulation than it has as yet obtained. The most crying present need of syphilotherapy is a standard treatment, sufficiently elastic to be adapted to all types of cases, and sufficiently simple to be used by the average physician,—unless a physician feels himself competent to carry out all the necessary procedures in the treatment of any given case, he should not attempt to treat it at all. Though many cases can be successfully dealt with by the general practitioner, he should realize that the appearance of any complicating features is sufficient to warrant the transfer of the patient to a competent syphilologist."—*Keidel and Moore.*

"Syphilis of the nervous system probably begins in the first year of the infection. The number of cases corresponds roughly with the total number of cases of so-called late neurosyphlis. These statements are based on the following observations:

"(a) The number of early cases showing positive findings in the spinal fluid; (b) familial types of neurosyphilis; (c) biologic evidence of a neurotropic strain of the treponema; (d) persistence of the infection in loco, as in aortitis, interstitial keratitis, etc.; (e) observation of patients who developed signs of early syphilis of the nervous system and who after years died of paresis or other late degenerations; (f) no serologic evidence as yet exists showing normal spinal fluid in the early stage and its infection at a later period.

"Early neurosyphilis may manifest itself by obtrusive symptoms, by slight objective signs or be asymptomatic. Unless they are properly and thoroughly treated these early infections may persist and cause late neurosyphilis.

"Every case of early syphilis should be treated intensively with arsphenamine and mercury given systematically in courses consisting of not less than eight injections of

arsphenamine or its equivalent, neoarsphenamine or silver arsphenamine or its equivalent, and fifteen injections of mercury; a minimum of two courses of the former and three of the latter should be administered. The treatment should be controlled by frequent Wassermann tests and a lumbar puncture made about six months after infection or earlier if indications should exist. Complete neurological examination should be made in order to detect early involvement of the nervous system and as a control for future examinations.

"The treatment outlined is not an insurance against the occurrence of neurosyphilis, which not infrequently takes place during the active administration of the drugs. In such cases intraspinal medication administered by one familiar with the proper technic may be a necessary adjunct. It is only by controlling early neurosyphilis that we can hope to prevent the later degenerations." — *John A. Fordyce.*

TUBERCULOSIS AND SYPHILIS OF THE LUNGS: *Carter,* Va. Med. Monthly, January, 1922, p. 553.

This author reviews the literature and submits the evidence which he has collected from the cases coming under his observation. He reports nine cases in detail. In these the diagnosis rested on the therapeutic tests. He finds that patients with tuberculosis, complicated by syphilis, will take arsphenamine and mercury, if the disease has not reached an advanced stage. (Note.—This observation is contrary to that of many other workers in tuberculosis, most of whom are fearful of the arsenicals in these cases.—W. W. W.)

TREATMENT OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM: *Smith,* Va. Med. Monthly, January, 1922, p. 561.

Syphilis invades the nervous system very early after the infection occurs. General treatment usually prevents the late manifestations of syphilis of the nervous system. When the late manifestations develop, a combination of general and direct treatment is recommended. The general treatment is with arsphenamine, mercury and iodides, according to a schedule given. The direct treatment is by the intraspinal injection of arsphenaminized serum, using from .4 to .8 mgm. per injection, at two or three-week intervals.

ADENOMA OF THE PITUITARY: *Hunter,* Va. Med. Monthly January, 1922, p. 563.

Five cases of adenoma of the pituitary are reported, with roentgenograms, visual fields and clinical histories. All were operated by W. E. Dandy, with three deaths and two recoveries.

Diagnosis in these cases rested on clinical symptoms of failing vision or bitemporal hemianopsia, with the x-ray findings of enlargement of the sella turcica. Patients usually consult the oculist first, on account of failing vision.

TUBERCULOSIS OF THE KIDNEY: *Dodson,* Va. Med. Monthly, January, 1922, p. 574.

This is an excellent article with several good illustrations of pathology. The diagnosis of tuberculosis of the kidney is dependent upon a carefully taken history and physical examination, and the nitelligent use of the cystoscope, microscope and x-ray.

Pus cells in the absence of pyogenic organisms points strongly to tuberculosis. Very frequently the diagnosis can be made from the cystoscopic appearance of the ureteral orifices, without invading the ureters. Catheterization of the normal ureter should be avoided, if possible.

The x-ray evidence of kidney tuberculosis consists in detecting the deposit of lime salts in caseating areas. When pyelography is used the signs are irregular contraction of the pelvis with cortical involvement, or when the pelvis is invaded, by unevenness in the pelvic outline, or dilated calyces with ragged borders. With communicating cortical lesions, the opaque fluid will show detached shadows or shadows with a narrow communicating line. At the Mayo Clinic, about one case in five showed abnormalities to the x-ray examination.

FOCAL INFECTION OF THE GENITO URINARY TRACT: *Price,* Va. Med. Monthly, Jaunary, 1922, p. 582.

Foci of infection in the urinary tract are, at times, associated with constitutional conditions. The writer's experience has proven that the following conditions do sometimes cause the development of metastatic lesions: Balanitis, balanoposthitis, prostatitis, stricture of the ureter, pyelitis, chronic gonorrhea, vesiculitis, verumontanumitis, pyelonephritis and hematagenous infection of the kidneys.

URETERAL CALCULI: *Livermore,* Jour. Tenn. State Med. Assn., January, 1922, p. 332.

A calculus which has passed into the ureter can, in the majority of cases, be made to pass on into the bladder. Crowell says that he has accomplished this in 98% of his cases. Livermore has devised an instrument which can be passed up the ureter, like a Walther dilator, by means of which the stone can be grasped and traction made on it.

DEVICE TO FACILITATE HANDLING OF PATIENTS IN WHITMAN ABDUCTION SPLINT: *Schussler,* Minn. Med., February, 1922, p. 114.

There is described a method of handling patient with fractured hip, easily and without discomfort. This in done with a large canvas belt and pulley arrangement attached to the horizontal cross beam of the Balkan frame. One nurse can raise and lower the patient, turn him over or move him from side to side of the bed, without discomfort to the patient or great effort on the part of the nurse. The article is illustrated with several cuts showing the construction of the simple mechanism.

CIRCULATORY DISTURBANCES OF THE FEET: *Geist,* Minn. Med., February, 1922, p. 98.

There is discussed the symptoms and classification of the arterial disorders of the feet. The etiology includes tobacco, alcohol, coffee, syphilis, diabetes, cold. The symptoms are pain, tenderness, swelling, coldness, numbness

and other sensory disturbances. The most important objective symptom is the absence of the dorsalis pedis pulse. He classifies the lesions into (1) congenitally small arteries; (2) arterial spasm; (3) arterioscerosis; (4) thromboangitis obliterans.

INTESTINAL POLYPOSIS AND ITS RELATION TO CARCINOMA: *Warwick*, Minn. Med., February, 1922, p. 94.

This author records the finding of two cases of intestinal polyposis, both discovered at necropsy. She suggests that these tumors be watched for and data be gathered regarding them, since they are perhaps more frequent than is supposed and because of their potential danger in developing into carcinomas.

MITRAL STENOSIS: Tuohy, Journal-Lancet, Jan. 15, 1922, p. 23.

This very interesting paper concerning what Mackenzie says "is the most common valvular defect with which heart failure is associated," calls attention to the fact that mitral stenosis begins as something else and very frequently is found unexpectedly in patients who have been under careful observation for a long period of time. This simply means that the stenosis is secondary to some other cause and develops to the point where it can be detected. Certain end results usually are found and these should always lead to further inquiry into the heart condition. These complexes are:

(1) Gastro-intestinal symptoms; about one-third of the patients come complaining of these presenting symptoms, which are due to passive congestion.

(2) Hemoptysis occurs in 9% of the cases.

(3) Cough, dyspnea and bronchitis occur in 72%.

(4) Infarction and emboli; these accidents may be the first evidence of the real underlying condition.

(5) Chest pain occurs in 2%.

The physical findings and the importance of fibrillation both as regards diagnosis and prognosis, are discussed.

THE DUODENAL TUBE IN THE STUDY OF LIVER AND PANCREATIC PATHOLOGY: *Dowden* and *Enfield*, Sou. Med. Jour., February, 1922, p. 103.

These workers believed that a comprehensive study on a comparatively few patients would be better than incomplete statistics from work on a large number. Therefore, they selected 100 patients, presenting various conditions, or healthy, and made the following observations:

(1) Clinical history; (2) thorough physical examination; (3) x-ray examination on 55 of the cases; (4) careful microscopic and cultural study of the biliary secretion; (5) estimation of the pancreatic ferments in the duodenal contents; (6) functional tests of the liver by study of the phenoltetrachlorphthalein in the recovered bile; (7) hemoclastic crisis of Widal and urobilin in the urine; (8) gastric, fecal and urine analyses and Wassermann tests; (9) blood chemistry and basal metabolism in many cases.

The investigators did not find sufficient uniformity in these tests or diagnostic procedures to warrant the acceptance of any one of them as conclusive of pathology, although they believe there is great promise in the future, after the methods have been thoroughly correlated with carefully taken histories and physical findings on a large number of patients.

OSTEITIS DEFORMANS (PAGET'S DISEASE): *Lewin*, Jour. of Bone and Joint Surg., January, 1922, p. 45.

The author gives a very thorough historical review of this rather infrequent but interesting condition, and reports three cases observed in Cook County Hospital (Chicago). The total number of cases so far reported in literature is 251. The essential pathology is an osteoporosis in the early stages, during which period occur the many bony deformities which call attention to the disease. In the later stages, the osteosclerosis occurs, the cortex of the bone becoming very hard. The article is very complete and will make a good reference for future use.

CHRONIC OSTEOMYELITIS SECONDARY TO COMPOUND FRACTURE: *Mebane*, Jour. of Bone and Joint Surg., January 1922, p. 67.

Of 359 cases of chronic osteomyelitis following compound fractures, 10% were still ununited after two years. Chronic osteomyelitis of spongy bones is more difficult to heal than those in the shafts of long bones. Osteomyelitis of the femur is the most difficult to cure. Careful effacements and partial closure give the best results.

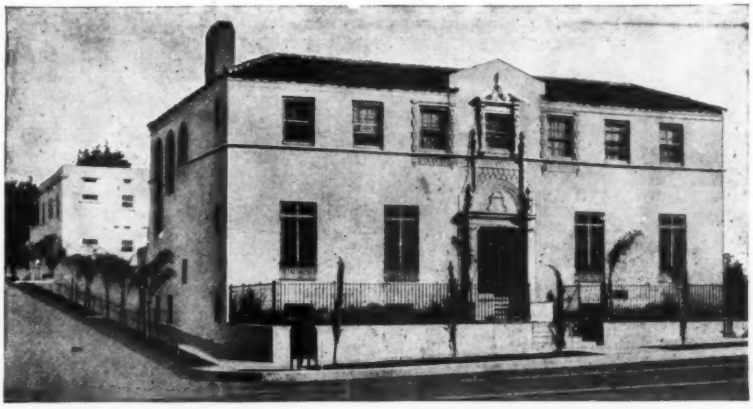
FRACTURE OF THE SPINE: *Kleinberg*, Jour. of Bone and Joint Surg., January, 1922, p. 80.

This is a fairly comprehensive presentation of the symptoms, prognosis and treatment of spine fractures, with several well illustrated case reports. The symptoms which suggest fracture of the spine are: (1) history of injury; (2) localized and persistent pain in the spine, with weakness of back, referred or nerve root pains and cord symptoms; (3) localized tenderness, deformity and limited mobility; (4) x-ray findings. Under treatment, among other things, the author discusses the advisability of immediate laminectomy in fractures with cord symptoms. He rather inclines toward the opinion that, on the whole, a few days of observation of the effects of rest and efficient support, offers the better prognosis, than immediate laminectomy on all cases.

BLOOD TRANSFUSION IN OBSTETRICS: *King*, New Orleans Med. & Surg. Jour., February, 1922, p. 549.

This author has employed transfusion by the citrate method, in obstetrical cases complicated by hemorrhage, puerperal infection, pernicious vomiting, and in hemorrhagic disease of the newborn. He claims that, in addition to the usual grouping by the Moss method, the patient's blood and the donor's blood should be

(Continued on page 174)



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(Continued from page 172)

tested against each other. (This point was further emphasized by Dr. Parham, in the discussion). In transfusion for puerperal septicemia, the author quotes Polak, whose practice is to give small transfusions (250 to 300 cc), at frequent intervals, rather than one large dose. In hemorrhagic disease of the newborn, the anterior fontanelle route is used, no difficulty being experienced, care being taken to be sure that the needle has not passed through the sinus and dura.

ACUTE INTESTINAL OBSTRUCTION CAUSED BY MECKEL'S DIVERTICULUM: *Grizzard*, Jour. of the Tenn. Med. Assn., January, 1922, p. 335.

Intestinal obstruction due to Meckel's diverticulum may be caused in several ways:

(1) Volvulus by rotation of the ileum about its mesenteric border caused by lever action of a distended diverticulum.

(2) Intussusception from invagination of an inverted diverticulum.

(3) The commonest form is through the diverticulum taking the form of a band, causing strangulation of the bowel loops caught between it and its attachment to the intestine.

The author reports a case caused by strangulation of the small bowel over a bridge formed by the diverticulum which extended from the umbilicus to a point on the ileum about 18 inches from the ileocecal valve.

PROPAGANDA FOR REFORM

UROTROPIN was removed from the list of articles accepted for New and Non-official Remedies because Schering and Glatz, Inc., refused to place the U. S. Pharmacopeia name hexamethylenamine (hexamethylenamina) on the label and in its advertising so as to make clear to physicians the identity of the product, and because it was sold under therapeutic claims which the Council held unwarranted. An advertising pamphlet sent to physicians in 1921 contains a number of unwarranted statements; particularly objectionable are the claims made for the use of Urotropin as an antiseptic in body fluids that are alkaline, such as the cerebro-spinal fluid, bile, aqueous humor of the eye, saliva, the excretions caused by middle ear infection and other excretions of the nasal, bronchial, laryngeal and mucous membranes. The lack of efficacy of hexamethylenamine in alakline secretions is generally admitted, and the clinical references to the use of hexamethylenamine in the pamphlet are obsolete. In the introduction to the pamphlet, Schering and Galtz state that they are well acquainted with the scientific research work discrediting the efficiency of hexamethylenamine in non-acid media, but that they feel that the accumulated evidence for its efficacy in such conditions should not be "brushed aside." However, the pamphlet is not made up of quotations, but of unqualified statements. With one exception, all reference to the antiseptic properties of the drug in alkaline media are previous to 1913; that is, before the importance of reaction of the medium was fully appreciated. To quote these earlier articles, without regard to the later work which in most eyes discredited them, constitutes in effect an exploitation of this brand of hexamethylenamine under unwarranted therapeutic claims. (oJur. A. M A. Feb. 18, 1922, p. 531).

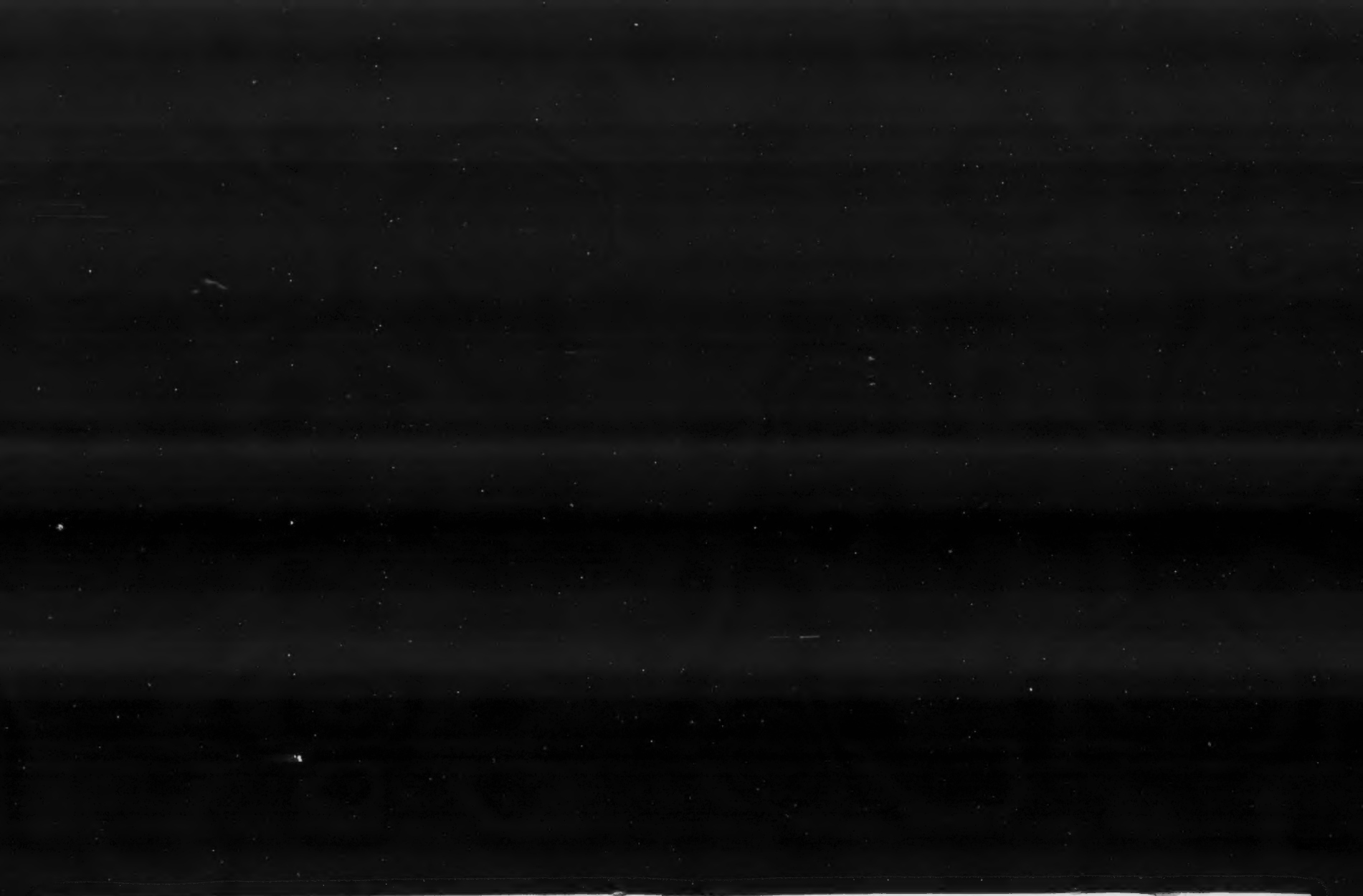
BIO-CHEMIC LABORATORIES' PRODUCTS.—The Bio-Chemic Laboratories, Chicago and Los Angeles, send out the following advertising: (1) "Salvarsan and Mercury without the Needle." In this pamphlet the use of Salv-Absorbs and Merc-Absorbs, preparations for the rectal administration of arsphenamine and mercury, respectively. (2) "Something New in Glandular Therapy—Caplets." This circular declares that "Caplets make possible the preparation of any pluriglandular combinations in your office. Your office girl can make them up for you." (3) "Why Gland Transplantation?" A circular devoted to "Orch-Absorbs" which is said to be "a preparation of interstitial glands for intra-rectal administration." No preparation of the Bio-Chemic Laboratories has been accepted for New and Non-official Remedies. The Council on Pharmacy and Chemistry, however, has published a report on another proprietary form of administering arsphenamine by rectum. This brings out the lack of evidence for the efficacy of this method of arsphenamine administration. The pluriglandular "Caplet" medication is a form of shot-gun therapy that has been the subject of a report of the Council on Pharmacy and Chemistry and has been discussed editorially. (Jour. A. M. A., Feb. 25, 1922, p. 603).

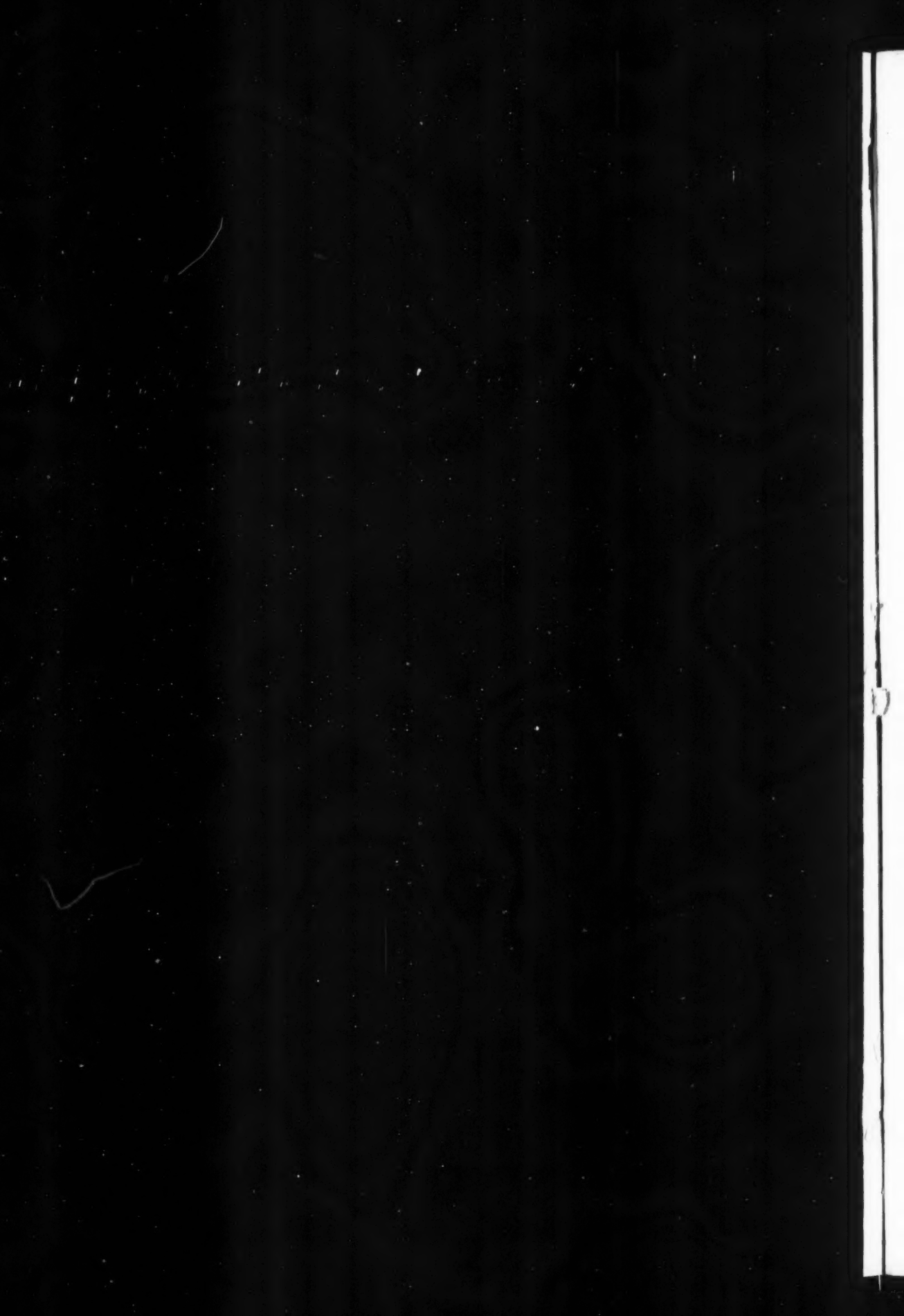
EFFECTIVE IODINE THERAPY

A striking innovation in iodine therapy has been the introduction of compounds of iodine with proteins. The advocates of these organic combinations assert that they are less irritating to the digestive tract and less inclined to set up the desagreeable symptoms of iodism—such symptoms, for instance, as coryza and skin eruptions.

Iodalbin is one of the later iodine compounds intended for internal use. It is a compound of iodine and blood albumin, containing approximately 21.5 per cent. of iodine. When administered by the mouth, Iodalbin suffers little change in the acid contents of the stomach, but on passing into the intestine it is dissolved by contact with the alkaline secretions and on absorption exerts a physiologic action similar to that of the soluble iodides. One great advantage possessed by Iodalbin is the fact that it is insoluble in the acid gastric contents. There is consequently less possibility of the distressing symptoms which so frequently follow the soluble iodides. Its blandness makes it acceptable to sensitive patients, and it is especially gratifying to those who object to the taste and nauseating effect of sodium or potassium iodide.

Iodalbin is manufactured by Parke, Davis & Company, whose advertisement appears elsewhere in this issue, and who offer to send descriptive literature to inquiring physicians.





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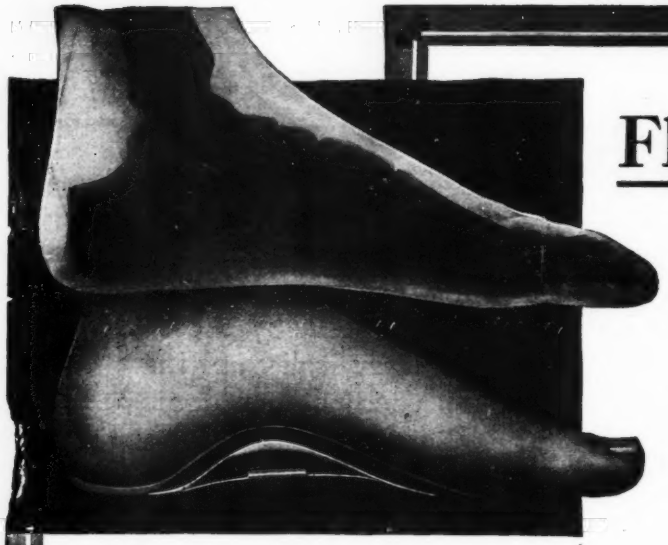

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